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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

ON THE RELATION OF CERTAIN PLANTS TO THE INGREDIENTS OF THE SOIL ON WHICH THEY GROW.

To the Editor of the Farmers' Register.

Your statement in a late number (12) of the Register, has satisfied me that the white or mountain locust (*Robinia pseudacacia,*) is native on the calcareous banks of the lower James River, and perhaps on similar soils of other streams emptying into the Chesapeake.

This brings to mind some similar facts which I had before noted. Bartram, in his Travels through the Southern States, long ago published, remarked, with surprise, the leather-wood (*Dirca palustris,*) and some other northern plants growing on *calcareous hills* in the lower part of Georgia. With equal surprise I remarked the same plant (*Dirca palustris,*) the calycanthus floridas, and a yew tree, (*Taxus montana?*) growing on calcareous knolls in Florida. Pursh found *taxus canadensis* on the banks of one of the streams in Maryland, probably on similar soil.

From these facts may we not conclude that calcareous soils have considerable effect in protecting growing plants from the injurious influence of an ardent sun and a warm climate? And from this may possibly be derived a hint of some value to the agriculture of the south. Thus, is it not probable that, on calcareous soils, good crops of wheat might be obtained in those parts of the southern states where it does not thrive well in the ordinary soils?

It is said that wheat does well in the prairies of Alabama, and I think you have remarked that the growth of clover is much promoted by marling in lower Virginia.

How is it that these soils have this effect? Is it simply by their tendency to *retain* the moisture afforded by rains and dews?

H. B. C.

Newbern, N. C., May 20th, 1835.

P. S. You may be assured that the honey locust is a native of the southern states, and I believe of the northern also.

[Our correspondent is on the right track of an interesting pursuit, which promises abundant and important results to the investigator who is aided by botanical knowledge, and by the wide range of observation afforded by travel. It is gratifying that the subject has now engaged the attention of one who may throw much light on it, and the few facts and deductions to which our correspondent refers, may lead him to others far more interesting. Even under all the acknowledged deficiencies of means for this investigation, we have long ago learned that the limits of the localities of various plants which were supposed to be regulated by climate, were in truth determined solely by the ingredients of the soil; and of all differences in soils in this and other respects, the greatest by far, the most important, and yet the least noticed heretofore both by cultivators and scientific men, is the difference caused by the presence or absence of calcareous matter. We earnestly hope that at least some curiosity is now excited on this subject, and that it will be properly investigated by those who have ample powers and means for the purpose.

The power which calcareous earth gives to soil (directly or indirectly) of attracting and retaining moisture, is an important aid to clover and other plants which require it. But this is far from being its only, or its greatest agency. Many plants, and clover is one of them, require lime as part of their food, without which they can scarcely exist, and certainly cannot thrive, even with every other requisite for growth. Except on a few favored soils, profitable clover culture was impracticable in all lower Virginia before the use of marl, or lime—and since marling, (and with other aids,) growths as luxuriant, as hardy, and as profitable, have been produced in our neighborhood, as any in the rich limestone lands of Pennsylvana; and this on soils that were formerly very poor, and naturally as unfavorable as any to this grass. Still these instances are rare, because the improvement has not yet been extended far, and because all that has yet been written and done, has not removed the long established and general, though erroneous impression, that our hot summers and sandy soils prevented the success of clover. Even our very intelligent correspondent, when alluding to the truth which we are desirous of having inculcated, does not appear to attach to it any thing like its due importance.

It would seem, from chemical observations, that the phosphate of lime is an essential ingredient of wheat—and therefore, that without a sufficiency of that ingredient in the soil, that grain cannot be produced. Whenever there is enough lime in the soil, in any form, wheat will be sure to obtain this necessary but small proportion of the phosphate. But in many extensive regions, as in New England generally, (on uplands,) it is said that wheat cannot be profitably raised—and doubtless, on account of the deficiency of lime in the soil. A quantity of lime too small to cause much improvement of soil, might serve to supply this essential food for wheat—and even a still less quantity of bone manure, the solid part of which consists entirely of phosphate of lime. But such facts are more strikingly manifested by certain plants, which thrive in plenty either upon the total absence, or abundance, of calcareous matter, and which cannot be found under opposite circumstances—as the mountain locust and papaw which we before cited, and others named above—and sheep sorrel, and our poverty grass, (or "hen's nest grass" as commonly called,) both of which are the most abundant growths of our poor soils destitute of lime, and of which not a trace will be found as soon as the land has been made calcareous. The observation of these and similar facts would often serve to indicate the nature, and degree of permanent value of soils, even to the rapid glance of a traveller.

It is to invite such observations that we have offered this hasty comment on our correspondent's remarks. It is astonishing what little attention the writers of descriptive travels (and even those who exhibit their knowledge of geology, mineralogy, chemistry, and botany,) have given to the composition of the soils of the regions which they described. Except from some incidental observations, or minor facts, it is rare that their readers can learn any thing, even indirectly, on this important subject.

But it is time to close these remarks, which are already too extended for their place, and yet too slight for the subject.

CALCAREOUS SOILS NECESSARY FOR VINEYARDS.

In some former remarks introductory to extracts from Bushby's *Journal of a recent visit to the principal Vineyards of Spain and France*, we offered the opinion that calcareous soil was essential to the perfection of grapes, and for obtaining from them wines of the finest flavor; and that to the want of calcareous matter in all the soils used for that purpose in the United States, was probably owing, in part at least, the general ill success of our culture of the vine. The opinion of the superior fitness of calcareous soils for vines, was partly founded on a short passage of the work above named, which described the soil that produces the celebrated Hermitage wine, as being highly calcareous. For that, and other extracts then given, we were indebted to a review of the *Journal*, (never having seen the entire work)—and in another review, just now met with, we find the following extract from the same work, presenting a statement of facts on this head, and more direct and full proof of the truth of the opinion which we before advanced.

When the author speaks of "calcareous soils" it may be inferred from the context (here and in the extract formerly published,) that he means *highly* calcareous—either actual chalk soils, or otherwise such as effervesce freely with acids. But it may be presumed that many if not all the other soils, which he speaks of as not calcareous, though producing good "sweet wines," have lime in some form. He does not seem to speak with much precision on this point—and the soils which he considers not calcareous, may contain more lime than any vineyards in the United States. But without this supposition, it is stated expressly that two-thirds of all the vineyards of France are on calcareous soils, and all those of both France and Spain "producing dry wines of reputation." Is not this statement (putting aside all theory and supposition,) enough to induce the making the soil of some vineyard in this country calcareous? There is scarcely an acre of soil, naturally calcareous, in any of the Atlantic states, and probably not one vineyard, if even one vine, has yet the benefit of a heavy cover of calcareous manure. Yet, from the small space occupied by a vineyard, and the great value of the products, marl or lime might be profitably used at an expense very far exceeding what would be justified by any other crops. If our view is well founded, if it cost $100 to make an acre of vineyard calcareous, it would be a profitable expenditure, compared to the culture, for a number of years, with the usual degree of success. Being a permanent improvement, the cost would be only equal to the interest of the outlay, or six dollars a year—which an improvement of quality of the wine of only a cent in the gallon would greatly overpay. We earnestly recommend the consideration of this matter to several of our subscribers near Richmond and Petersburg who have vineyards, and who could, at very little expense, make the trial. But enough of mere opinion. We proceed to give the author's facts as well as his opinions, in his own words.

"Having recorded with so much minuteness my observations on every vineyard and district through which I passed, I will avoid adding to the length of this journal by offering many general remarks. I cannot, however, refrain from observing, that, from the albarizas of Xeres, the most southern vineyards of any reputation in Europe, to those of the chalky hills of Champagne, amongst the most northern, I met with no vineyard producing dry wines of reputation which was not more or less calcareous. Although it is acknowledged that two-thirds of the vineyards of France are situated upon soil more or less calcareous, by Chaptal, and other writers upon the subject, they have stated that, provided the soil is porous, free, and light, its component parts are of little consequence; and they enumerate granitic, schistose, argillaceous, flinty, sandy, and calcareous soils, as equally well qualified to produce, and as actually producing, in different parts of France, wines of the finest quality. It appears evident to me, however, that these writers have, in many instances, been misled by the representations which have been transmitted to them: as, for instance, when Chaptal and Cavoleau cite the wine of Hermitage as an instance of the excellence of wines produced upon the debris of granite; while the fact is, that the wine of the hill of Hermitage owes its superiority over the wines of the other hills in its neighborhood only to the circumstance of the granitic soil of a part of that hill being mixed with calcareous matter; and, but for this circumstance, I am satisfied that the wine of Hermitage would never have been heard of beyond the neighborhood where it grows. I am therefore of opinion, that the finest dry wines owe their superiority chiefly to the quality of the soil; and I am much mistaken if it be not found that the soils of all vineyards producing dry wines of superior excellence are strongly calcareous. All my observations have led me to this conclusion, and I know of no instance to the contrary. It will be observed, that I here only speak of dry wines, for sweet wines of great excellence are produced in a variety of soils, and in fact, owe their qualities more to the variety of the grape, and the manner in which it is treated, than to the soil. The sweet *Muscat* and *Old Mountain* wines of Malaga are celebrated all over the world; but though they have the same varieties of vines at Malaga as at Xeres de la Frontera, and pursue a similar practice in making the wine, the best of their dry wines, produced on a soil consisting of decomposed slaty schist, are insipid and flavorless when compared with the Sherries which are produced on the chalky hills of Xeres. The sweet wine of Rivesaltes, the most celebrated in France, is produced on a granitic soil covered with pebbles; and the sweet wines of Cosperon and Collioure, in the same department, are produced on hills of schist, as nearly as possible resembling those of Malaga. But though the dry wines of both these soils are well known, they are not distinguished for their fineness or flavor. Their excellencies are their strength and rich color, which make them valuable for mixing with the weak and light colored wines of the ordinary growths

of Burgundy and Maçon which supply the chief consumption of Paris.

"The limited extent of the first-rate vineyards is proverbial, and writers upon the subject have almost universally concluded that it is in vain to attempt accounting for the amazing differences which are frequently observed in the produce of vineyards similar in soil and in every other respect, and separated from each other only by a fence or a foot-path. My own observations have led me to believe that there is more of quackery than of truth in this In all those districts which produce wines of high reputation, some few individuals have seen the advantage of selecting a particular variety of grape, and of managing its culture so as to bring it to the highest state of perfection of which it is capable. The same care has been extended to the making and subsequent management of their wine, by seizing the most favorable moment for the vintage—by the rapidity with which the grapes are gathered and pressed, so that the whole contents of each vat may be exactly in the same state, and a simultaneous and equal fermentation be secured throughout—by exercising equal discrimination and care in the time and manner of drawing off the wine, and in its subsequent treatment in the vats or casks where it is kept—and, lastly, by not selling the wine till it should have acquired all the perfection which it could acquire from age, and by selling, as the produce of their own vineyards, only such vintages as were calculated to acquire or maintain its celebrity. By these means have the vineyards of a few individuals acquired a reputation which has enabled the proprietors to command almost their own prices for their wines; and it was evidently the interest of such persons that the excellence of their wines should be imputed to a peculiarity in the soil, rather than to a system of management which others might imitate. It is evident however, that for all this a command of capital is required, which is not often found among proprietors of vineyards; and to this cause, more than to any other it is undoubtedly to be traced, that a few celebrated proprietors have acquired, and maintained, almost a monopoly in the production of fine wines."

EXTRACTS FROM A REPORT ON SELECT FARMS,

Made by an examining committee, appointed by the Société d' Agriculture et d' Economie Domestique de Rosay (Seine-et-Marne.) September, 1834.

Translated for the Farmers' Register, from the *Annales de l'Agriculture Francaise*, of November, 1834.

[Of the farm of Chapelles, only part of the observations of the committee are here given, and that, principally, because of the more full notice of the four-shift rotation, which is again referred to in the succeeding statements. Of the two farms of Noas and La Grange, to which the two first prizes of the society were awarded, the remarks of the committee are given entire. The reports on six other farms are omitted. Whether the details here presented to our readers may possess any practical agricultural value, or not, those relating to La Grange will be of some interest, as exhibiting something of the private life,and humble but useful labors, of the illustrious man who belonged to our country as much as to that which gave him birth, and to the world—and whose deeds were more for mankind, and less for self aggrandizement, than those of any, or all the *great men* now leading or governing nations, or striving to attain such eminence.]

Farm of Chapelles, belonging to M. Caron, cultivated by M. Vignier.

The tillage of the lands belonging to the farm of Chapelles, is almost completely subjected to the four-shift rotation, based upon the sowing of clovers on wheat, and of oats upon the clover lay—the rotation most suitable for all kinds of land, because it is readily accommodated to all the partial modifications which may be suggested by the circumstances of the farmer, and of his land—and which is inflexible only on one point, viz: the constant alternation of grain crops and artificial grasses.

M. Vignier did so much the better in adopting this improvement, as his land, naturally wet, having been put in lucerne by a preceding tenant, could no more bear that grass, notwithstanding all his care to establish it. He has not succeeded in making it grow, except upon a lot of land which had not yet borne it. He attributes his success to the use of *poudrette*,* of which he has sown a great quantity at the same time with the lucerne seed. The growth on the part thus sown, is much finer than that of the same ground, in lucerne without *poudrette*. M. Vignier makes considerable use of this manure, of which he knows the good effects on wheat. It is said that its effect is not prolonged beyond that of one crop: but he has made an observation on that head, which deserves to be cited. This is, that a crop of clover, made upon wheat manured from the farm-yard, where there had been, four years before, wheat made on *poudrette*, grew much finer than the other clover made after two such crops of wheat on farm-yard dung, or one crop manured by penning, and one from the farm-yard. Perhaps we ought to conclude that this alternation of *poudrette* and farm-yard manure suits best, especially for humid soils, because that the *poudrette*, by its effervescent action making the soil enter into fermentation, acts not only as [alimentary] manure, but as an improver of the texture of the soil. After the wheat, without doubt the part serving as manure is exhausted, as the action of the *poudrette* is very quick: but the improvement of the soil remains—the earth is warmed, reanimated, and more proper than any other to bear good crops, with the addition of farm-yard manure.

The rotation of the farm of Chapelles is certainly that which suits it the best, and M. Vignier follows it with perseverance and intelligence. All his ploughings are well executed, his ground in the best state of preparation—and yet, though the land of this farm may be of good enough quality, the products are not such as would be desired. The crops of this year, especially, are far from answering to a culture so judicious and well executed. The wet nature of the soil is opposed to complete success: it requires to be tilled precisely at such times and seasons as it is in the best order for receiving tillage, and without permitting the commencement of the difficulties by which the crops suffer. The amelioration of the soil is not yet enough advanced—there remain

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*This is dried and pulverized human excrement—prepared generally in towns in France, where large quantities of the material can be collected from privies, or from cleaning out the public "*fosses des aisance*." —Tr.

still too many traces of imperfect culture—the lands are disposed to get foul with weeds very quickly. These various reasons oppose the suppression of naked fallows, (which he cannot use but with much caution,) and of course, oppose the developement of a system of agriculture entirely prosperous. * * * *

M. Vignier has attempted this year to make a large quantity of field beets, [*betteraves*] or mangel wortzel, (seventeen arpents;)* they were not advanced at the time of our visit, but were coming on well, and will doubtless give good products. He regularly has ten arpents in potatoes, well cultivated.

We remarked a field of rape [*colza*] of some arpents, promising a good crop. This is a novelty, which is so much the more useful as it has had complete success, which will, without doubt, encourage the cultivators of the country to follow the example.

The proprietor of this farm, M. Caron, has not confined to the buildings his participation in the improvements. He has devoted himself, with interest, to all that can favor the culture of the land. A general marling—numerous ditches which he has made at the demand of the farmer—plantations of fruit trees—roads—in short, all that can be useful, is executed by him as soon as the utility is known.

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Farm of Noas—Commune de Pécy.

It is on the farm of Noas that we have seen established most completely, and with the most remarkable success, the regular four-shift [*quadriennal*] rotation. On a middling soil, there are seen the finest crops. Upon 400 arpents of arable land, nearly all unfit for lucerne, M. Vignier cultivates 100 arpents of wheat—70 in clover, made on the manured wheat—90 in oats, of which 70 are upon a clover lay, [*defriche des trefles,*] the balance upon a lay of lucerne, or after vetches, or potatoes, or other roots.

We will again call attention to this point, that generally the soils of this farm are middling—in many places even the land is very bad. Well! no where is there found a bad crop: every part bears what might be hoped from good culture, with success proportioned to the worth of the different pieces of land compared with each other.

The fallow (this year lost for the bad cultivator) is in this farm devoted entirely, according to a rational system, to the melioration of the land, and to the production of useful crops. Fifteen arpents only have been left in naked fallow: this was the part which had need of repeated ploughings, perfectly executed, and at precise times, to bring it to the state of good order common to the other land of the farm: the remainder had been in rye, grazed by the sheep, and in vetches, also grazed or cut green; and five arpents in potatoes and thirty-five in field beets or mangel wortzel. These roots are made after three ploughings, and receive three hoeings [*binages;*] they are of the finest growth, and promise a very abundant crop. M. Vignier has told us that he has made this root at the rate of about 35,000 weight to the arpent—which may perhaps be equivalent to 1000 *bottes* of dry forage. He prefers the beet to the potato, for the consumption of beasts, because it appears to him to contain less of the water of vegetation—and also for the preparation of the soil, because that wheat grows well enough after the beets, whilst the trials that he has made after potatoes have been without success.

The interior of the farm, [homestead, or farm buildings] answer well to the exterior culture. A cow-house contained 24 cows of the finest form, in the best condition, and appearing fit to yield good products. The flock consisted of about 700 sheep, and 200 lambs, all of fine wool. The grown sheep are in good condition; but the lambs appeared not to be in such state as might have been expected. It appeared that the pasturage being short, the lambs had not yet been turned out. This is the only thing which the inspection of this fine establishment showed to be defective; but the good state of the rest of the flock, proves that circumstance is but accidental: and it should be remarked, that the range or "commons" [*parcours*] of the farm is limited to about 450 arpents, near the lands which compose it.*

M. Vignier has established at Noas, at his own expense, those parts of buildings which would have been deficient, as extensive sheds, sheep folds of light construction, and a thrashing machine.

We have no need of telling you, gentlemen, how much satisfaction we have experienced in visiting the establishment of M. Vignier. Such complete success of intelligent labor has confirmed us in the opinion, that the most prosperous destiny awaits agriculture, when it shall have received the developements of industry.

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Farm of La Grange-Blesneau—Commune de Courpalais—belonging to Gen. Lafayette, directed by M. Lécuyer.

We have ended our rural visits with the farm of

*The arpent is not now a legal measure in France, and was not uniform every where when it was legal. It does not vary much from our acre.—Tr.

*The "*parcours*" does not consist of pasture land belonging to a particular farm—but to the whole *commune*, or territorial district—and indeed the *parcours* of adjacent *communes*, by law, owe reciprocal service, by which the beasts of one *commune*, may be driven to graze on the territory of a neighboring *commune*. See "*Parcours*" Vol. VII. p. 235, *Cours Complet d'Agriculture etc. par l'Abbé Rozier*. Thus the grass furnished to the flock of any one proprietor, by 450 arpents of "*parcours*," is a very indefinite amount—but could scarcely be of much value in any case. There is another legal right of grazing in France, sometimes (as Rozier says) confounded with this, and which is still more injurious to agriculture. This is the local usage and right of "*vaine pasture*," by which the owners of beasts may graze them upon the lands of the *commune* generally, after the crops have been taken off. A similar usage was getting established in Virginia—and though without legal sanction, would have became "time honored" and irrevocable, if *Arator* had not taught us the necessity of protecting our fields from grazing, and thus induced the expulsion of the intruders, before they had become too strong to be resisted.—Ed. Farm. Reg.

La Grange, which will be celebrated as the place of residence of Gen. Lafayette, and which is also for us an object of particular interest, as a rural establishment founded by that illustrious man, under whose presidency our society was formed.

Around a vast yard, (or court) are arranged the buildings belonging properly to the farm.

There are seen sheep folds large enough for a flock of a thousand head. They are well lighted and ventilated, boarded or ceiled, and once a year whitened with lime; so that the flock is kept in the best condition for health.

The flock is not more than seven to eight hundred head. It was found proper to reduce it on account of the barrenness of the common range, [parcours] of which the product has been lessened by the growth of the trees planted on the borders. The flock which is now in very good condition, has been brought to a high state of improvement by successive crossings of the merinos of Rambouillet, which had formed its primitive foundation with sheep of Saxony, of Naz, and of the flock of M. de Jessaint. Its products have been the object of distinction to the meeting of the department.

The great cow-house can contain about twenty-four cows, and is in the most simple form; only the paved floor of it is so inclined that the urine is collected and preserved in a pit, dug outside of the building, from which it was drawn for use.

The cows are generally fine. Part of them came from Switzerland, and others are the issue of the same race. They are all capable of yielding good products. We name especially the cows of Schwitz, which are the best milkers of the farm, and which M. Lécuyer, its superintendent, places above all known of the best in the country as beasts of profit. The bull is of the same stock.

A second cow-house contains cows of different breeds, particularly an English breed, the Devonshire, of which, but a short time before his death, the General received a bull and two cows from England. These beasts have not yet had time and opportunity to furnish means to appreciate their qualities.

At the end of this cow-house is the stable.

Opposite the window of the proprietor, is the habitation of the superintendent, disposed with simplicity and convenience. At the side is the bake-house, an apartment well occupied in an establishment so extensive, and in which the inhabitants, the masters as well as the laborers, and domestics, eat the same kind of bread. In the bake-house, are the entries of two dairies perfectly well situated and arranged, the one for winter, and the other for summer—and also the entrance of the steaming apparatus, of which we shall speak hereafter.

This apartment, and all connected with it, are kept with a degree of order and neatness, which leave nothing to be desired.

The bread is prepared by using a kneading machine, with the operation of which the superintendent is well satisfied, because the dough is well worked, with less trouble and expense than if kneaded by hand. It is a useful instrument—and indispensable in a house where they bake frequently, and in great quantity.

At the end of this building is the place occupied by a steaming apparatus, which has no other ordinary use except the cooking of an immense quantity of potatoes for feeding all the beasts. At the right and left of the boiler, are two vessels which can contain each, fourteen *setiers* of potatoes, and which, well covered, can be cooked in a few hours, the fire being fed by wood of very little value.

We cannot propose this boiling establishment as a model for imitation, except for a large farm and extensive operations, directed on account of the proprietor, or for a model farm: but there, where it is, it renders great service, and is considered as one of the most useful things. It has been made sometimes to serve for purposes of another kind, which in this house are not less precious: it is to give vapor baths gratuitously to the poor and sick, who could not otherwise procure them.

Gen. Lafayette had recently caused to be made in the farm-yard,* a pit, with two large ditches or drains under the dung hill, to collect the water: above the pit is a pump for the purpose of watering the manure from the pit, and ditches which empty into it.

We noticed the poultry houses which are closed on the south with a grating of iron, which permits free entrance to the air. In another yard, to the north, and serving as entrance to the farm buildings, is the piggery: to this the yard is exclusively appropriated. The greatest cleanliness is here preserved—and the animals find all the attention and space necessary for them. They appear to live well, and to be well managed for the yielding of manure.

Next is the press house, where the wine and cider flow by subterraneous pipes into the cisterns and casks placed in a large vault on one side. On the other side are sheds for the various ploughing utensils: and under these sheds there are immense vaults or cellars under ground, designed to hold the root crops, which are poured down through trap-doors, opening under the sheds.

At the east of these buildings there is yet another yard, where stands a vast granary, closed with frames of planks, which are raised or lowered at will. In this building is fixed a thrashing machine.

A great number of utensils of various kinds are put away under the sheds, and particularly ploughs of all kinds: the plough without wheels of Roville, that of M. Rosé, and others Belgian and American, and the Grangé plough: but all the work of the farm is done with the ploughs of Brie.

The object of M. Lafayette being to obtain immediate returns, new experiments have not been treated by him but as subsidiary, and on a small scale. This is a model farm in respect to the product obtained by a good combination of culture, rather than a theoretical school of agriculture.

The lands of the farm consist of about 500 arpents, of which 100 arpents are in turf and meadows, given almost entirely for pasturage for the sheep.

The remaining 400 arpents are of arable land, divided into fields of 24 arpents, by alleys and rows of apple and pear trees. Of these, 96 arpents are in lucerne, 96 in wheat, 48 in oats, 24 in barley, for the purpose of being sowed in lucerne, 24 ar-

*"*Cour de la ferme*," the open space surrounded by the farm buildings, and not simply the dung yard, or winter cow-pen, as the terin is used here.—TR.

pents in field beets and potatoes, and 96 arpents, instead of being in naked fallow, are entirely laid down in common clover, of which only one cutting is taken, and in crimson clover, [*trefle incarnat*,] rye, vetches and peas, grazed or cut green for feeding cattle.

To the potatoes and beets cultivated on 24 arpents succeed oats, on which common clover is sown. After the first mowing of this clover, this piece returns under fallow. The crimson clover is sown upon the stubble of the wheat or oats, and after being once mowed, it also returns under fallow, with the advantage that, this crop being very forward, the land is ploughed in the same time as if the fallow had been naked.

The rye and the vetches of winter and spring, are made upon the stubbles of wheat and oats, and even a sowing of vetches is again made partially after the grazing of the green rye; and after their being grazed or mowed, these lands are also thrown into fallow, which, as may be seen, follows every year, upon 24 arpents which had borne wheat the preceding year: that is to say, this portion of land is cultivated as if in two-shifts; but only one time, until its turn comes again, which depends on the quantity of land to which this exhausting culture may have been applied.

The numerous flocks of the farm secure the means of suitably manuring from the farm-yard, or by folding, the land designed for the wheat crop. But as one part, which had produced wheat the preceding year, exacts a greater abundance of manure, and as there are 24 arpents of beets and potatoes, which require a great quantity of the better manure, the superintendent of the farm, M. Lécuyer, has sought to multiply his supplies of manure, by composing it of *poudrette* and *urate** with the cleanings of moveable privies, and the urine of the cattle, collected, as before stated, in a covered pit. He showed us the experiments which he has made with this manure this year, on some furrows, compared with manuring by penning, and from the farm-yard: and the wheat on this manure, applied at the rate of ten to twelve hectolitres the arpent, was as good as on the land folded on, or manured from the farm-yard. This manure is made, in part, of matters which ordinarily remain in the farm-yard manure; there is this advantage however, that being destined for a particular use, these matters, which are the excrement of horses and urine of cows, are collected and used with more particular care. We have not seen that the manure in the yard of this farm was inferior to that of other farms. In short, if this supply of manure is not entirely a new product, it is certainly an improvement.

There are on this property many thousand fruit trees, now in full bearing. They have already yielded near 300 casks [*piéces*] of cider; and it is believed that this year, that number will be doubled. The average may be counted at 150 casks a year.

A quantity of forest trees are planted, especially wherever there is a waste spot, however small it may be.

Further—the farm of La Grange, a useful model in many respects, is subjected also to very good and careful tillage. The 24 arpents of roots, the 100 arpents of lucerne, the meadows and pastures, the 100 arpents of clover, rye and vetches, which occupy the fallow, the whole pastured or mowed, give an immense product of forage, so that every year there are sold from the farm ten to twelve hundred *bottes;* which is an important profit, and which has been so for some years.

The root crops, followed by oats, and then by clover, offer a partial rotation well arranged: but what appears to us a fault, is the necessity of taking again for wheat one-fourth of the land which had borne wheat the preceding year, and, to make barley, 24 arpents of the land which had borne wheat. This is to return to a bad system, after having come out of it happily. Wheat made upon common clover may often succeed well; but the success of it in our country, is not enough assured to make it the foundation of a rotation. We do not conceal that we found the land, otherwise well ploughed and manured, giving evidence of the defects of this rotation; and that called, each part in its turn, to undergo this forced production, some are found not in that state of cleanness and fertility, which insures good crops. The lucerne also, made in too large proportion, yields less abundantly: it is to this disproportion that we believe ought to be attributed the defects of this rotation. The four-shift rotation founded upon the sowing of clover on the grain crops, with a less quantity of lucerne, might furnish as much forage for consumption and for sale, and not imposing on the land the bearing of forced products, would maintain it in a better state of fertility. The comparison, while we acknowledge the merit of the good culture of La Grange, has confirmed us in our opinion that the four-shift rotation, such as is followed on the farm of Noas, is the most rational, and the most conformed to the invariable principles of good culture. * * * *

*Urate, in chemical nomenclature, means salt formed by the combination of the uric acid with any base. But as used here, it must be intended for urine collected in, or absorbed by, any other matter whatever.—TR.

From the Cultivator.

AGRICULTURAL BOOKS.

We have been requested, by a correspondent of the Genesee Farmer, to furnish a list of agricultural books, suitable for a farmer's library. This we do cheerfully, remarking by the way, that the number of *American* books is very limited; and that in selecting those of foreign origin, we must take much chaff with the wheat. The elementary principles of husbandry are pretty general in their application, while the practical operations of different countries must necessarily be variant, not only on account of difference in climate and soil, but in productions for the market, price of labor, habits of the people, &c. No European system of practice is therefore exactly adapted to our wants, though it may embrace much that is highly beneficial.

Independent of the memoirs which have been published by the agricultural societies in Pennsylvania and Massachusetts, and by the Society of Arts and Board of Agriculture in New York, the *American* works on agriculture, that we have been acquainted with, are, to name them in the order in which they appeared, 1. Deon's New England Farmer; 2. Boardley's Husbandry; 3. Arator, a series of agricultural essays, by John Taylor, of Virginia; 4. A Treatise on Agriculture, by Gen.

Armstrong; 5. The Farmer's Assistant, by John Nicholson; 6. Lorrain's Husbandry; 7. Essay on Calcareous Manures, by E. Ruffin; and 8. The Complete Farmer, by T. G. Fessenden. These are all worthy a place in a farmer's library, as well as the memoirs first named. Of Nos. 1 and 7, new revised editions have lately been published at Boston and Richmond. Of the others, copies are scarce, and the memoirs, we believe, cannot be purchased. No. 4 is a work of merit, comprising a great mass of interesting matter, detailed with great conciseness and perspicuity. No. 6 was written by an excellent practical farmer, who blended a great deal of useful reading and nice observation with an extensive practice. The writer was a self-taught philosopher, who scrutinized narrowly into cause and effect, and we believe was a very successful farmer. The Essay on Calcareous Manures, is an invaluable treasure to all who can avail themselves of lime and marl, as sources of fertility. No. 8 is principally a judicious compilation from the agricultural papers of our country. A new edition is now in the press. There are several American publications which treat of the orchard and the garden, which it is unnecessary to enumerate, as they may be found in all our seed shops.

Of foreign publications upon husbandry, we should recommend the following, in the order we name them:—Low's Elements of Practical Agriculture; Lawrence on Cattle; Davy's Agricultural Chemistry; Sinclair's Code of Agriculture, and, (last, *only* on account of its expense,) Loudon's Encyclopædia of Agriculture. The Farmers' Series, published by the British Society for diffusing useful knowledge, affords an excellent compendium of British husbandry, though but partially adapted to our country.

But neither foreign nor American books ought to supersede the agricultural periodicals of the day. These abound in communications from our best farmers, and detail the improvements which are continually developing in rural labor. We venture to say, there is not a farmer in the Union, of common intelligence and enterprize, who is ambitious to improve his condition, and who takes an agricultural periodical, that is not more than remunerated for his subscription, by the useful information which he acquires from it. They are generally printed in a form to be easily preserved, and they ought to be preserved. We subjoin a list of such as are known to us, for the benefit of the readers of the Cultivator:—

Published quarterly.—The New York Quarterly Journal of Agriculture, at New York.

Monthly.—Southern Agriculturist, at Charleston, S. C.; Farmers' Register, at Shellbanks, Va.; New York Farmer, New York: Cultivator, Albany; Tennessee Farmer, Tennessee; Fessenden's Practical Farmer, Boston; Rural Library, a monthly publication of 32 8vo. pages, New York.

Semi-monthly.—Farmer and Mechanic, Cincinnati, Ohio.

Weekly.—Genesee Farmer, at Rochester; New York Farmer, at New York; New England Farmer, at Boston; Maine Farmer, Winthrop, Me.; Yankee Farmer, Cornish, Me.; Ohio Farmer, Columbus, Ohio; Southern Planter, Columbus, Georgia.

Devoted to Horticulture particularly.—The American Gardener's Magazine, by Hovey & Co., and Horticultural Register, by G. E. Barret, both monthly 8vos., published at Boston.

Devoted to Silk Culture.—The Silk Culturist, at Hartford, Conn., and the Silk Worm, at Albany.

To Orchards and the Vine.—Coxe on fruit trees; Thatcher's Orchardist; Prince's Pomological Manual; Kenrick's New American Orchardist, and Prince, Adlum, Loubat and Rafinesque on the Vine.

The Quarterly Journal of Agriculture and New York Farmer are from the same press, as are the New England Farmer and Practical Farmer. The Rural Library is a re-publication of American works on husbandry and gardening.

We can neither give the prices of all the books we have enumerated, nor refer to the bookstores at which they can be had. The periodicals may be obtained, by addressing the editors of the respective works.

From Gibbon's Decline and Fall of the Roman Empire.

ACCOUNT OF THE EARLY USE OF, AND TRADE IN SILK, AMONG THE ROMANS, AND FIRST INTRODUCTION OF THE SILK WORM INTO EUROPE.

I need not explain that *silk* is originally spun from the bowels of a caterpillar, and that it composes the golden tomb from whence a worm emerges in the form of a butterfly. Till the reign of Justiman, the silk worms who fed on the leaves of the white mulberry tree, were confined to China; those of the pine, the oak, and the ash, were common in the forests both of Asia and Europe; but as their education is more difficult, and their produce more uncertain, they were generally neglected, except in the little island of Ceos, near the coast of Attica. A thin gauze was procured from their webs, and this Cean manufacture, the invention of a woman, for female use, was long admired both in the East and at Rome. Whatever suspicions may be raised by the garments of the Medes and Assyrians, Virgil is the most ancient writer, who expressly mentions the soft wool which was combed from the trees of the Seres or Chinese; and this natural error, less marvellous than the truth, was slowly corrected by the knowledge of a valuable insect, the first artificer of the luxury of nations. That rare and elegant luxury was censured in the reign of Tiberius, by the gravest of the Romans; and Pliny, in affected, though forcible language, has condemned the thirst of gain, which explored the last confines of the earth, for the pernicious purpose of exposing to the public eye naked draperies and transparent matrons. A dress which showed the turn of the limbs, and color of the skin, might gratify vanity, or provoke desire; the silks which had been closely woven in China, were sometimes unravelled by the Phœnician women, and the precious materials were multiplied by a looser texture, and the intermixture of linen threads. Two hundred years after the age of Pliny, the use of pure or even mixed silks was confined to the female sex, till the opulent citizens of Rome and the provinces were insensibly familiarized with the example of Elagabalus, the first who, by this effeminate habit, had sullied the dignity of an emperor and a man. Aurelian complained, that a pound of silk was sold at Rome for

twelve ounces of gold: but the supply increased with the demand, and the price diminished with the supply. If accident or monopoly sometimes raised the value even above the standard of Aurelian, the manufactures of Tyre and Berytus were sometimes compelled by the operation of the same causes to content themselves with a ninth part of that extravagant rate. A law was thought necessary to discriminate the dress of comedians from that of senators; and of the silk exported from its native country, the far greater part was consumed by the subjects of Justinian. They were still more intimately acquainted with a shellfish of the Mediterranean, surnamed the silkworm of the sea: the fine wool or hair by which the mother-of-pearl affixes itself to the rock, is now manufactured for curiosity rather than use; and a robe obtained from the same singular materials, was the gift of the Roman emperor to the satraps of Armenia.

A valuable merchandize of small bulk is capable of defraying the expense of land carriage; and the caravans traversed the whole latitude of Asia in two hundred and forty-three days, from the Chinese ocean to the sea coast of Syria. Silk was immediately delivered to the Romans by the Persian merchants, who frequented the fairs of Armenia and Nisibis: but this trade, which in the intervals of truce was oppressed by avarice and jealousy, was totally interrupted by the long wars of the rival monarchies. The great king might proudly number Sogdiana, and even *Serica*, among the provinces of his empire; but his real dominion was bounded by the Oxus, and his useful intercourse with the Sogdoites, beyond the river, depended on the pleasure of their conquerors, the white Huns, and the Turks, who successively reigned over that industrious people. Yet the most savage dominion has not extirpated the seeds of agriculture and commerce, in a region which is celebrated as one of the four gardens of Asia; the cities of Samarcand and Bochara are advantageously seated for the exchange of its various productions; and their merchants purchased from the Chinese the raw or manufactured silk which they transported into Persia for the use of the Roman empire. In the vain capital of China, the Sogdian caravans were entertained as the suppliant embassies of tributary kingdoms, and if they returned in safety, the bold adventure was rewarded with exorbitant gain. But the difficult and perilous march from Samarcand to the first town of Shensi, could not be performed in less than sixty, eighty, or one hundred days; as soon as they had passed the Jazartes they entered the desert; and the wandering hordes, unless they are restrained by armies and garrisons, have always considered the citizen and the traveller as the objects of lawful rapine. To escape the Tartar robbers and the tyrants of Persia, the silk caravans explored a more southern road; they traversed the mountains of Thibet, descended the streams of the Ganges or the Indus, and patiently expected, in the ports of Guzerat and Malabar, the annual fleets of the West. But the dangers of the desert were found less intolerable than toil, hunger, and the loss of time; the attempt was seldom renewed, and the only European who has passed that unfrequented way, applauds his own diligence, that in nine months after his departure from Pekin, he reached the mouth of the Indus. The ocean, however, was open to the free communication of mankind. From the great river to the tropic of Cancer, the provinces of China were subdued and civilized by the emperors of the North; they were filled about the time of the Christian æra with cities and men, mulberry trees and their precious inhabitants; and if the Chinese, with the knowledge of the compass, had possessed the genius of the Greeks or Phœnicians, they might have spread their discoveries over the southern hemisphere. I am not qualified to examine, and I am not disposed to believe, their distant voyages to the Persian gulf or the Cape of Good Hope: but their ancestors might equal the labors and success of the present race, and the sphere of their navigation might extend from the isles of Japan to the straits of Malacca, the pillars, if we may apply that name, of an Oriental Hercules. Without losing sight of land, they might sail along the coast to the extreme promontory of Achin, which is annually visited by ten or twelve ships laden with the productions, the manufactures, and even the artificers, of China; the island of Sumatra and the opposite peninsula, are faintly delineated as the regions of gold and silver: and the trading cities, named in the geography of Ptolemy, may indicate, that this wealth was not solely derived from the mines. The direct interval between Sumatra and Ceylon is about three hundred leagues: the Chinese and Indian navigators were conducted by the flight of birds and periodical winds, and the ocean might be securely traversed in square-built ships, which, instead of iron, were sewed together with the strong thread of the cocoa-nut. Ceylon, Serendib, or Taprobana, was divided between two hostile princes; one of whom possessed the mountains, the elephants, and the luminous carbuncle, and the other enjoyed the more solid riches of domestic industry, foreign trade, and the capacious harbor of Trinquemale, which received and dismissed the fleets of the East and West. In this hospitable isle, at an equal distance, (as it was computed) from their respective countries, the silk merchants of China, who had collected in their voyages aloes, cloves, nutmeg, and santal wood, maintained a free and beneficial commerce with the inhabitants of the Persian gulf. The subjects of the great king exalted, without a rival, his power and magnificence; and the Roman, who confounded their vanity by comparing his paltry coin with a gold medal of the emperor Anastosius, had sailed to Ceylon, in an Ethiopian ship, as a simple passenger.

As silk became of indispensable use, the emperor Justinian saw, with concern, that the Persians had occupied by land and sea the monopoly of this important supply, and that the wealth of his subjects was continually drained by a nation of enemies and idolaters. An active government would have restored the trade of Egypt and the navigation of the Red Sea, which had decayed with the prosperity of the empire; and the Roman vessels might have sailed, for the purchase of silk, to the ports of Ceylon, of Malacca, or even of China. Justinian embraced a more humble expedient, and solicited the aid of his Christian allies, the Æthiopians of Abyssinia, who had recently acquired the arts of navigation, the spirit of trade, and the seaport of Adulis, still decorated with the trophies of a Grecian conqueror. Along the African coast, they penetrated to the equator in search of gold, emeralds, and aromatics; but they

wisely declined an unequal competition, in which they must be always prevented by the vicinity of the Persians to the markets of India; and the emperor submitted to the disappointment, till his wishes were gratified by an unexpected event. The gospel had been preached to the Indians: a bishop already governed the Christians of St. Thomas on the pepper-coast of Malabar: a church was planted in Ceylon, and the missionaries pursued the footsteps of commerce to the extremities of Asia. Two Persian monks had long resided in China, perhaps in the royal city of Nankin, the seat of a monarch addicted to foreign superstitions, and who actually received an embassy from the isle of Ceylon. Amidst their pious occupations, they viewed with a curious eye the common dress of the Chinese, the manufactures of silk, and the myriads of silkworms, whose education (either on trees or in houses) had once been considered as the labor of queens. They soon discovered that it was impracticable to transport the short lived insect, but that in the eggs a numerous progeny might be preserved and multiplied in a distant climate. Religion or interest had more power over the Persian monks than the love of their country: after a long journey, they arrived at Constantinople, imparted their project to the emperor, and were liberally encouraged by the gifts and promises of Justinian. To the historians of that prince, a campaign at the foot of mount Caucasus has seemed more deserving of a minute relation than the labors of these missionaries of commerce, who again entered China, deceived a jealous people by concealing the eggs of the silk worm in a hollow cane, and returned in triumph with the spoils of the East. Under their direction, the eggs were hatched at the proper season by the artificial heat of dung; the worms were fed with mulberry leaves; they lived and labored in a foreigh climate: a sufficient number of butterflies was saved to propagate the race, and trees were planted to supply the nourishment of the rising generations. Experience and reflection corrected the errors of a new attempt, and the Sogdoite ambassadors acknowledged, in the succeeding reign, that the Romans were not inferior to the natives of China in the education of the insects, and the manufactures of silk, in which both China and Constantinople have been surpassed by the industry of modern Europe. I am not insensible of the benefits of elegant luxury; yet I reflect with some pain, that if the importers of silk had introduced the art of printing, already practised by the Chinese, the comedies of Menander and the entire decades of Livy would have been perpetuated in the editions of the sixth century. A larger view of the globe might at least have promoted the improvement of speculative science; but the Christian geography was forcibly extracted from texts of scripture, and the study of nature was the surest symptom of an unbelieving mind. The orthodox faith confined the habitable world to one temperate zone, and represented the earth as an oblong surface, four hundred days journey in length, two hundred in breadth, encompassed by the ocean, and covered by the solid crystal of the firmament.

From the Baltimore American.

REGION OF THE TEA PLANT.

A letter has been received by a gentleman of Philadelphia from the Secretary of the Asiatic Horticultural and Agricultural Society at Calcutta, stating that the tea plant has been discovered growing abundantly in the north-east portion of the British possessions in India, adjoining the province of Yumar in China, in which the plant is cultivated. The discovery is announced as one of great importance. It may be doubted however whether it will prove so. Good teas like good wines only grow in particular districts. A vast quantity of the tea raised in China is so ordinary as to be unfit for exportation, and the plant produces best between the 26th and 30th degree of latitude. By a reference to the map, it will be seen that the north-east region of British India does not extend beyond the twenty-fourth degree of latitude. In China itself, although the culture has been widely extended to meet the increased demand throughout the world, by far the best teas are confined to the two original provinces. The inhabitants of Tonquin and Cochin China, countries lying almost between China and British India, are consumers of tea, but are obliged to go to China for their best, being able to raise nothing but a very coarse black tea on their own territory.

From the New York Farmer.

POTASH AS A MANURE.

I was pleased to see an inquiry suggested in a recent number of the New York Farmer respecting the use of potash as a manure as practised on Long Island, but regret to find no answer furnished by those to whom the inquiry was directed. In the absence of better information on the subject, permit me to state what has been my brief experience in the use of this manure.

I had a lot of meadow land, containing about three acres, which had been reduced to poverty by severe cropping. On this piece of ground I made the following experiment. Having broken up the sward, and harrowed it repeatedly until quite mellow, I spread leeched ashes over one acre, and potash dissolved in water over the other two acres; sowed millet seed, clover, and timothy, all mixed together, in the proportion of one part of each of the latter to five of the former, and one bushel of the mixture to an acre; harrowed all in together on or about the first of sixth month.

The ashes cost fifteen dollars; the potash five dollars the acre; the expense and trouble of dressing with potash, about in the same proportion. And now it was a matter of no small interest to me, a novice at farming, to observe the result of an experiment, which when made, I supposed to be entirely original. The crop of millet was fine, and as nearly alike as could have been expected, if the land had all been covered with the same kind of manure. The clover also, all over the lot, was luxuriant, and gave the strongest evidence, to my mind, that potash is the principal agent in leeched ashes, which causes fertility. I made trial of potash on a lot of four acres, which was considered the poorest on my farm, on which I sowed millet with the potash. I sowed at the same time four other acres without any manure, on ground considered much better than the last above mentioned.

I cut double the quantity of hay from that dressed with potash, and of a better quality. Thus

far my little experience goes in favor of potash as a manure; but I much desire that some of thy subscribers, of larger experience, and abler pens, would favor us with light on this interesting subject.

T. D.

Burlington 4th mo. 8th, 1835.

[The foregoing statement shows that potash is, for the first year, as productive a manure as leeched ashes, and at only one-third of the cost. But the writer is greatly mistaken in supposing the fertilizing principles of both to be the same. They may be similar and equal in the effects produced, but are still very different in composition. If the ashes were completely "leeched," they were deprived entirely of that substance of which the other manure consisted entirely. The fertilizing principles of such ashes, consist principally of, first, carbonate of lime, second, phosphate of lime, (far more valuable than the carbonate,) and if obtained from a soap factory, of some quick lime besides, added to aid the separation of the potash. All these last are permanent manures—and the potash being a soluble substance, and applied in small quantities, is probably of transient benefit.—Ed. Farm. Reg.]

William and Mary College,
June 3, 1835.

To the Editor of the Farmers' Register.

Dear Sir—Since my article on the fluctuation of price was forwarded to you, the stockholders of the James and Kanawha improvement have met, organized the company of directors, and appointed their president. The directors, I understand, are intelligent, business men, stationed along the whole line of the contemplated improvement, and earnestly devoted to its advancement. The gentleman whom they have chosen president has devoted the last six or seven years of his life almost exclusively to the cause of internal improvement. He has displayed in its behalf ability, untiring zeal, and persevering industry, almost unparalleled. Under these favorable auspices, the great central improvement of Virginia will no doubt be quickly executed—producing an influence on the economical, political, and moral condition of our state almost incalculable.

In the exposition which I have given of prices I have spoken of the deleterious drain of our population and capital to the west, and its effect on the price of real property, and of labor in Virginia. The contemplated improvement in our state is calculated to exercise so salutary and so powerful a counteracting influence in this respect, that I have supposed my article on price would be incomplete without this little *addendum*, explaining briefly my views of the operation of the James and Kanawha improvement on emigration, and on the prices of real property, and labor.

With high respect, &c.

T. R. DEW.

THE IMPROVEMENT OF THE JAMES AND KANAWHA RIVERS—MISCHIEVOUS EFFECTS OF THE EMIGRATION TO THE WEST.

For the last half century Virginia has been pouring forth upon the regions of the west the full tide of emigration. She may be literally said to have become the "fruitful mother of empires." Her population and capital, almost as fast as they have increased, have been swept off by this tide to the distant west, and the soil of Virginia has been left comparatively naked and unimproved, whilst this mania has been operating. Is there a young man of promise, upon whose education the kind father has almost exhausted his resources? How apt is he, when he arrives at the age of maturity, to ask for his little patrimony, and move off to the far west. And the hardy laborer, whose strength and industry constitutes his only property, is disposed to follow on in the same direction, where imagination presents in brilliant colors to his view, ample fields and large domains which are to be *all his own*, and where, in the decline of life, he is to enjoy sweet contentment in the lap of luxury and ease.

The evil effect which this emigration has produced on the condition of Virginia is almost incalculable. It is one of the principal causes of our stationary condition, and of the great depression in the price of real property.

The injury resulting from this emigration is much more than in proportion to the mere numbers who leave us. In the first place, the great majority of emigrants consists of males, who are all over the world more productive laborers than females, and these males are generally between eighteen and thirty, at that period of life when their labor is worth most to society. Up to the age of eighteen, generally, the individual is what the economists call an unproductive consumer, and therefore a burden to the state.

In the second place, the laborers who emigrate are generally among the most efficient and enterprising, because, as a citizen of the west once observed to me, in his strong but unpolished language—"it is only the most energetic and hardy who can boldly resolve *to pull up stakes* and move from their homes."

In the third place, many young men whom we lose by this emigration to the west, are those upon whose education there has been made considerable expenditure, and who are always to be ranked among our most valuable citizens, both in a moral and politico-economical view. The man who in any of the learned professions is making $2000 by the exercise of his talents, is worth in an economical light, four times as much as the simple laborer who earns but $500, and more still in a moral point of view.

In the fourth place, a large proportion of the emigrants to the west take along with them a very considerable amount of the accumulated capital of the state, and this paralizes our agriculture and commerce.

Influence of our central improvement on emigration.

Let us now examine into the probable operation of the James and Kanawha improvement on this tendency to emigration. And first, upon the emigration of western Virginia. For some years past, the emigration from the western and middle counties of Virginia has been as great or perhaps greater than from the eastern. The western portion of Virginia, situated at a great distance from market, possessing roads and improvements of the most wretched character, is necessarily forced to

become a grazing country. A grazing country admits but a sparse population—few laborers are required to attend to the cattle. "When the stock is purchased and put upon the pasture (says a very able correspondent from the west)—two or three men can readily attend to several hundred, if sold in November: but if reserved for market in January or February, then a few laborers will be required to raise corn (maize) to feed them during the winter months, which is given in aid of good hay. None can pursue this business with any hope of success unless he has large possessions in land."

Now the effect of this system is two-fold. 1st. to concentrate the property of western Virginia in the hands of a few men—and 2ndly, to produce a redundancy of population, wherever the numbers increase very fast; for as it requires but few to attend to the cattle, all beyond become supernumeraries, and are generally disposed to move off to the great west.

Now what is the remedy for this? Most undoubtedly such a change in the whole labor system as will create a demand not only for all the labor which they now have in western Virginia, but all that they can raise there by the procreative energies of society. The great central improvement will produce this effect. By increasing the facilities of transportation to market, farmers will be encouraged to change the grazing into the grain growing system, because the latter is more lucrative than the former, wherever the productions can be carried to market. "Were a conveyance to market practicable (says the same very intelligent correspondent, from whom I have just quoted) of the usual products of the soil, as wheat, barley, potatoes, rice, &c., the grass farm would soon be divided into several farms for the growing of wheat, which is much more profitable. The five acres of land allowed the ox, if cultivated in wheat, would certainly produce fifty bushels, which would be fully sufficient to manufacture ten barrels of flour, worth at least forty dollars! whereas the beef raised from the same ground would only bring from ten to fifteen—at most, twenty dollars."* It is evident then that the moment you convert the grazing system of the west into the grain growing system, that moment will you produce a new demand for labor. Every new plough which is stuck into the ground will require a new laborer to manage it. This will check at once the emigration from the western portions of Virginia, and will produce, no doubt, an additional demand for labor, which will be supplied most readily from the slave population of eastern Virginia. The effect of this will be most happy. It will, by the diffusion of our slave population over the tramontane regions, add to the wealth and prosperity of that whole country, whilst it will give a homogeneous character to our population, and destroy that dangerous discrepancy of interest, whose baneful operation was so decidedly felt in the convention of Virginia, and which, if it continue, will produce the most unhappy and even disastrous effects.

But again: the influence of our central improvement in checking emigration from eastern Virginia, will be almost as great as that which is exerted on the emigration from the western portion. The immediate effects of the improvement will be to pour the immense productions of the west down upon our Atlantic borders, for exportation. This will necessarily produce a great importing and exporting business—a large town, with many smaller ones, must spring up somewhere within our limits—capital will flow into these towns and spread itself over the adjacent country—the towns themselves will create a new and great demand for the productions of the lower country—the whole system of tillage will be changed by the beneficial operation of this state of things—the garden cultivation will take the place of the grain growing system in the neighborhood of the towns, and diffuse an increased prosperity every where. "The farms of Long Island," says Professor McVickar, "are now turned into gardens, and this not by being driven from their old employments, but by the superior temptations of the new—fruit and vegetables gradually taking the place of butter and grain, and thus creating a new demand for land of the next grade of contiguity. This position may further be illustrated by the history of the supply of fat cattle for the New York market. A century ago they were raised on farms adjoining the city; they are now principally raised three hundred miles from it—driven step by step, through the superior profitableness of the new crops demanded by the increasing extent and trade of the metropolis."* So will it be with lower Virginia. The large farms will be broken into smaller ones—these smaller farms will give an increased employment to free labor, while the towns themselves will increase the demand for the same kind of labor much more than for slave. This will check the tide of emigration among the whites, and keep our population at home.†

Thus this great improvement is eminently calculated to check the emigration from both the eastern and western extremities of our state, and keep our increasing population with us. Now I have no hesitation in affirming that this single effect will be worth to Virginia more than the whole improvement will cost. It will raise the price of lands throughout the state—it will increase and multiply the occupations and trades of the community—it will introduce manufactures, cause a rapid improvement in our agriculture, and change the whole aspect of our state.

The immediate effect of the improvement will be to raise the price of labor in another manner likewise. It will cause in the next five or six years the expenditure of millions of dollars along the line of the improvement. This expenditure will increase enormously the demand for labor, and will raise the hire of negroes throughout the state, besides attracting to it free laborers from all quarters. I wish my limits and time would allow me to show, by numerous examples furnished by the history of canals, rail roads, &c. both in this country and Europe, the immense advantage which

*This letter was written in 1832.

*A gentleman from Missouri assures me that a large portion of the cattle for the New York market is now raised in that state, a thousand miles off.

†As the slave is paid for when carried out of the state by a slave dealer, this emigration does not injure the state, because an equivalent value is left behind: unless indeed where the ready sale of the slaves stimulates the seller to sell his land likewise, and take the whole capital with him to the west.

has resulted from the mere expenditure of money in the construction of the improvement. Population thus attracted to the state will frequently form ties within our limits which will make them a permanent accession just at a time when we stand most in need of them.

If every dollar expended in our state on the James and Kanawha improvement could have been procured from abroad at the rate of four or five per cent., I have no hesitation in saying, it would have been better for Virginia to have borrowed the whole sum instead of raising it at home by subscription. For I have no doubt that the tolls on the improvement will ultimately pay much more than interest on the money expended. And we know too that so soon as the line is in full and complete operation, the price of property, and the profits of stock will rise throughout the state —new employments will spring up—increased energy and activity will be communicated to our population every where, and there will consequently be a new and rapidly increasing demand for capital. Hence the greater disposable wealth in the hands of the people, the greater their prosperity at such a time.

I do not however, by the remarks made, wish to be considered as censuring those who favor the joint-stock scheme of our state. It was the only plan perhaps which could have been successfully carried through, and therefore ought certainly to have been supported rather than leave the state without any improvement at all. There are many other advantages which will result from this improvement, but as they do not fall within the limits which I have prescribed for myself in these brief remarks, I will here draw them to a close.

PHENOMENON.

By a gentleman recently from Prince William county, Virginia, we have been informed, (says the Georgetown Metropolitan,) of a remarkable occurrence which took place on the Neabsco tract, about four miles from Dumfries, on Monday sen' night, during that heavy thunder storm, which, it will be recollected overspread the whole heavens, and apparently visited every quarter of our country. The earth for several acres, which was previously firm and good, *suddenly* (from its present appearance) sunk to the depth of about four feet, and cracked open in innumerable places throughout the whole mass, as if it had been blown by gunpowder. The thunder and lightning which here was comparatively slight, there was awfully heavy and severe, accompanied by an abundant shower of hail, which however, was not so injurious to the grain as to the window glass. Numerous persons have visited the spot, but are totally unable to account for the remarkable phenomenon. Some suppose it to have been produced by the shock of an earthquake, although the people residing in the neighborhood experienced, or rather observed no sensation during the storm to justify such a conclusion; yet it is possible such might have been the fact, as from the continual blaze of lightning and the heavy peals of thunder, with a combination of apprehension for their personal safety, they might have had the shock of an earthquake which they attributed to the effects of a raging storm.

EXTRACTS FROM AN ADDRESS TO THE ESSEX COUNTY AGRICULTURAL SOCIETY.

By Ebenezer Moseley, President of the Society, *September* 25, 1834.

Unsettled opinions on Agriculture.

The art or science of agriculture, if examined, will be found to be as far removed from certainty as the law. That is, there is not any settled opinion as to the means of producing the best results. Agriculture, in its highest state of improvement, must be the result of long experience. The great utility, therefore, of agricultural societies, is, that they call forth to public observation the experience and practice of those, who have been most successfully engaged. Yet it is not a little surprising that agriculture, which was coexistent with man, which has passed through all the successive ages and generations of men, which has had the knowledge of this long experience reflected upon it, is yet, probably, in its infancy, and involved in much uncertainty.

I will illustrate this idea of its uncertainty by taking the cultivation of corn. One would naturally suppose, that the long experience among us in the cultivation of corn, would have settled down in establishing in the minds of all men, some fixed and settled rules as to every part of its cultivation. Yet we find that such is not the fact. I begin with the planting of corn. It is not yet well settled, whether the moon has an influence upon vegetation. Some plant without regard to the moon, and some are very careful to plant only in certain stages of the moon. Some recommend soaking and even sprouting the corn before it is planted, others think it does as well without. Some advise planting in hills, while others think a better crop is produced by planting in rows. Some place the manure over the corn, some place the corn over the manure, while others spread the manure over the ground. With respect to hoeing the corn, some think the corn should be hoed while very young, to destroy the weeds, yet others prefer the corn should remain and the weeds grow up till they get to some height. The reason assigned is, that the corn is less liable to be destroyed by birds, squirrels and worms. Some are of opinion that no hill should be made about the corn, while others deem the hilling the corn to be attended with much benefit. Some practise taking the suckers from the corn, while others severely censure this practice. Some are of opinion that the stalks should not be cut until the corn is sufficiently ripened to be gathered; others are of opinion that cutting the stalks* after the farina has fallen, does no injury to the corn, and affords an excellent fodder for cattle in the winter.

Such are some of the various opinions which have been advocated relative to the cultivation of corn. It is not my design in mentioning them, on this occasion, to speak discouragingly of the art of agriculture. My more immediate object is, to show the importance of greater exactness and closer observation on the part of those, who turn their attention to the subject of agricultural experiments.

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* Above the ears, is meant—or "tops" as called here.—Ed. Farm. Reg.

Influence of Agricultural Publications.

The improvement which has been made within a few years in the art of agricultural implements, must be highly gratifying to every farmer. Who, forty years ago, would have thought it possible to raise one hundred bushels of corn on one acre of ground? Yet now, it is no uncommon case for a farmer to raise a much greater crop. This improvement must be attributed in a great measure to the influence of the press. If we go back but half a century, I believe we shall find no periodical publication either in Europe or America which treated exclusively on the subject of agriculture. The consequence was, that in those districts, where particular branches of husbandry were the most successfully and judiciously treated, the knowledge remained with them, unless, perhaps, slowly communicated from one to another, as accident or opportunity should offer. But when journals, devoted to this art, began to be put in circulation, containing the experience of intelligent, learned and practical men, the improvement in particular districts became very generally disseminated. It is true indeed, that in many cases these publications were coldly and reluctantly received, from a false notion, that book learning, especially when it contradicted the opinion they had derived from tradition, must be very visionary. The light of truth has in a great measure removed these errors, and a new era has commenced upon the subject. The knowledge which has been derived from science and experience in one quarter of the world is communicated by the press to all others, and that which was claimed as private property is now communicated for the benefit of all. One fact will strikingly illustrate this subject. When Mr. Knight, president of the London Horticultural Society, sent his first present of new pears in 1823 to Mr. Lowell, his letter and the list which accompanied it, were published in the Massachusetts Agricultural Repository. Within twelve months, application was made for these fruits, and scions were actually distributed from the lower part of Maine to Cincinnati in Ohio.

Among the great improvements which have been made in tools and implements of husbandry, the plough may be mentioned as an instance. Such have been the great improvements in this article, within a few years, that I am told one yoke of cattle will do the work, in one day, which formerly required two yoke, and will do the work, much better. Our ancestors used the flail to thrash out their grain, but modern invention has produced a machine, moved by horse power, and thrashes out as much grain in one day, as one man can thrash in ten days with a flail.

A rake has been invented, moved by horse power. It is said that by this horse rake one man with a horse will put the hay into windrows as fast as eight men can put it into cocks, after it is raked. Among the wonders of the age steam has been applied with surprising success in propelling vessels on water and wagons on land: but in my wildest flights of imagination, I had never conceived the idea that steam could be applied to agricultural purposes. Yet Professor Rafinesque of Philadelphia, a gentleman of great scientific attainments, advertises for farmers his steam plough, by which six furrows are ploughed at once, and which he says will in one day perform the work of a single team for a week, and in the best manner. What a delightful contemplation. How wonderful is man! May we not indulge the hope, that the day is not remote, when all agricultural operation will be performed by steam.*

* * * * *

On the best season to cut timber—Influence of the moon on vegetation.

There is one subject, connected with forest trees, upon which there appears to be a diversity of opinion, and which I wish to present to your consideration, that you may compare it with your own experience. It is, as to the best time to fell

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*The discovery referred to above was advertised as follows, on the covers of the New York Farmer—

"Steam Ploughs.—Professor Rafinesque, of Philadelphia, offers his services to introduce the use of steam ploughs in the United States. If there is a wealthy farmer who owns level land, and has patriotism enough to connect his name with this wonderful invention, whereby six ploughs can be driven, and six furrows cut, as easily as one now, and one day's labor do the work of a whole week—let him apply to me, and I will enable him to have such a steam plough made for himself and all his neighbors, thus setting the example of this wonderful application of steam."

We, like Mr. Moseley, hope that signal benefits will hereafter be derived from the application of steam power to agricultural processes—but would nevertheless advise that but slight reliance should be placed on the labors of Professor Rafinesque for this purpose—as he has been remarkable for ill success (to say no more) in bringing his numerous and wonderful inventions into use. For example—the same paper from which the foregoing is copied, contains the two following advertisements, which, (with another offering to save many millions by a substitute for railway transportation,) were long published to invite the attention of the heedless and obstinate public. Yet it seems that nobody has availed of these magnificent offers of insurance; and houses are still burnt as often as heretofore, ships sunk, and steamers blown up, without the least regard to Professor Rafinesque's benevolent plans, and splendid discoveries.

"Incombustible Architecture.—Incombustible dwelling-houses and buildings of all kinds devised or built in New York, or any part of the United States, as cheap as any other combustible buildings. Actual buildings and houses rendered incombustible at a small additional expense.

Ships of all sorts, and steamboats, rendered incombustible, and not liable to sink, at a small expense.

For sale, 10,000 lbs, of Antignis, or Incombustible Varnish, at one dollar per pound.

Apply to C. S. Rafinesque, Professor of Hist. and Nat. Sciences, Chemist, Architect, &c , in Philadelphia, No. 59 North 8th street. A pamphlet given gratis."

"To Steamboat Companies.—Professor Rafinesque, of Philadelphia, offers his services to render steamboats incombustible, and not liable to sink, even by the bursting of boilers, or striking against snags, sawyers and rocks. This will save many boats, much property, and the lives of hundreds every year. Those who neglect this easy improvement, deserve to be neglected and deserted by the public as unmindful of safety. Apply, post paid."

timber, with a view to its durability. To me, it is a matter of much surprise, that the opinions of practical men are not uniform and settled upon this subject—a subject so important to almost every man in society, and particularly to those who have any interest in civil and naval architecture. The subject appears to be as unsettled in Europe as in this country, or rather the prevailing opinion in both countries is probably erroneous. It appears to be the more general opinion in Europe and in this country, and the practice has conformed to this opinion, to fell timber in the winter, or while the sap is down; or to be more precisely accurate, in the month of February in the old of the moon. In France, by a royal ordinance of the year 1669, the time of felling naval timber was fixed from the first of October to the fifteenth of April, in the wane of the moon. Napoleon, having adopted the opinion that ships built of timber felled at the moment of vegetation, must be liable to rapid decay, and require immediate repairs, from the effects of the fermentation of the sap, in those pieces which had not been felled in the proper season, issued a circular order to the commissioners of the forests, that the time for felling naval timber should be abridged, and that it should be in the decline of the moon. from the first of November to the fifteenth of March. Commodore Porter, of the American Navy, in the communication which appeared in the American Farmer, gives it as his opinion, that the most proper season for felling timber, with a view to its durability, is in the winter, when the sap has ceased to circulate. He is of opinion that the moon has a powerful influence upon timber, as well as upon many other things.

Notwithstanding this powerful array of authority for felling timber in the winter, while the sap is down, to increase its durability, many experiments have been made which seem to establish the fact that timber cut when the sap is in most active circulation, is most durable. Mr. Benjamin Poor, the owner or occupant of Indian Hill Farm, in this county, in a communication to Gorham Parsons, Esq. published in the Massachusetts Agricultural Repository, states the following fact as within his own knowledge and observation. His grandfather, in the fall of the year 1812, selected two white oak trees, size, situation, general appearance as to age and health and the soil, as near alike as possible. In the month of March following, in the old of the moon, one tree was cut, the timber carried to the mill and sawed into suitable timber and scantling for an ox cart, and put it up to season in the open air. The middle of June the other tree was cut, carried to mill, and sawed as the former, suitable for an ox wagon, and put up in the open air to season, and treated in every respect like that cut in March. In the fall of the year, both parcels of timber were housed, and in the spring following an ox cart was made from one, and an ox wagon was made from the other parcel, both painted, and the work alike in all respects. They were used principally for hauling stone, and if there was any difference in the service to which they were used, it was that the June timber had the hardest. They were both housed in the winter and commonly remained out in summer. Mr. Poor says, at this time (1821) the one made of timber cut in March is very much decayed, the sides defective, much bruised, and a general appearance of decay, while that made of timber cut in June is perfectly sound, has not given way nor started in the joints, or in any respect appears half as much worn as the other, although it has had the hardest service.

The late Hon. Timothy Pickering, the first president of our society, whose zeal and intelligence, connected with his long experience and great industry, give to his opinions much value, appears to have been of opinion, that the best time for felling timber trees for durability, is, when the sap is vigorously flowing. He states the following fact, as communicated to him by Joseph Cooper, Esq., of New Jersey, a practical farmer. Mr Cooper's farm lay upon the banks of the Delaware, nearly opposite Philadelphia, and was exposed to the ravages of the British army while occupying that city. Pressed for fuel, his fences first fell a prey to their necessities, and in the month of May, 1778, they cut down a quantity of his white oak trees; but circumstances requiring their sudden evacuation of the city, his fallen timber was saved. This he split into posts and rails. The ensuing winter, in the old of the moon, in February, he felled an additional quantity of his white oaks, and split them into posts and rails to carry on his fencing. It is now, said Mr. Cooper, twenty-two years since the fences made of the May fallen timber were put up, and they are yet sound; whereas those made of trees felled in February, were rotting in about twelve years. Mr. Pickering treats the notion, that the moon has an influence upon timber or vegetation, as visionary.

I have before said, that it is not yet well settled whether the moon has any influence upon vegetation. It is, indeed, a singular fact, that this subject should remain unsettled even to the present day; and yet it is so far unsettled, that probably one-half of our farmers who have occasion to sow a field of turnips, would prefer the old of the moon. I have never had any belief in the supposed influence of the moon, and have generally adopted the opinion, that industry and sunshine will be very well without any aid from the moon. I have generally ranked this opinion of the moon's influence, with those superstitions which would give importance to the circumstance, whether the moon was first seen over the right or left shoulder, or whether an enterprise would be successful commenced on Friday. And yet some men of great science and experience are firm in the belief of its influence.

It would be an amusing exercise to collect the various opinions and facts, both ancient and modern, upon this subject, but it would far exceed the limits of this discourse. I will however remark, that the ancients paid great regard to the age of the moon in the felling of their timber. Their rules appear to have been to fell timber in the wane of the moon, or four days after the new moon; some say let it be the last quarter. Pliny orders it to be in the very article of the change, which happening in the last of the winter solstice, the timber he says, will be immortal. Columella says, from the twentieth to the twenty-eighth day. Cato, four days after the full. Vegetius, from the fifteenth to the twenty-fifth for ship timber, but never in the increase: trees then much abound with moisture, the only source of putrefaction.

Commodore Porter, we have seen, is of the opinion that timber should be felled in the old of the moon to give it durability, and he expressly says that its influence is nearly, if not quite as

powerful as the sun. The commissioners of the French forests require such timber to be cut in the old of the moon, and such has been the standing regulation from the year 1669.

Mr. Staples, of Turner, in the County of Oxford and State of Maine, in a communication in the New England Farmer, describes himself as above the age of seventy years, and during the greater part of that time has been a practical farmer. He removed to this place at the age of twenty-two, when the country was new, and was among the five first settlers, and has given particular attention to the moon's influence on timber, vegetation, &c. He says, that it is a truth, that the moon operates upon the earth and every thing which grows upon it, much more powerfully than is generally imagined. It is also true, that the effects of her operation vary regularly, as she passes through her orbit or monthly course. Timber, cut in the wane of the moon, will be much more durable than it would be if cut between the new and full moon. Her operations are so great and different in the various parts of her orbit, that by cutting one tree three hours before the new moon, and another of the same kind six hours afterwards, and preserving them one year, a very striking difference in the soundness of them will be discovered. If I had known, says Mr. Staples, as much at the age of twenty-two years, as I now do, relative to this subject, I am satisfied it would have benefited me more than a thousand dollars, particularly in clearing hard wood land and in getting durable timber for buildings of all kinds, and for sleds, carts, &c.

He says, I have found by experience that fruit trees set out in the wane of the moon, and particularly on the last day of the last quarter, are more likely to live and be flourishing, than when set out at any other time. I have proved by experiments for ten years in succession, that an apple tree limb or graft, cut off in the month of May, about three hours before the moon changes, and carefully set out, will grow and do well.

Another writer says, that in the months of May, June, and July, oak trees, in the new of the moon, will readily part with the bark, when, in the old of the same moon, the bark will adhere closely.

Such are some of the opinions and facts to support the affirmative of this question; but opposed to these opinions may probably be found most of the scientific and practical agriculturists of the present day. Doctor Dean and Colonel Pickering, men of great experience, practical knowledge and accurate observation, consider these notions of the moon's influence as visionary. There are certain operations of the moon upon the earth, which are obvious and admitted by all. It affords us light by night, it turns the earth in some degree from its elliptical orbit, it occasions a small oscillation in the earth's axis, it causes the ebbing and flowing of the sea, and a like effect upon the atmosphere. But heat, which is the cause of vegetation, has never yet been discovered in the collected rays of light from the moon. Experiments, made at the Royal Observatory in Paris, have proved, that the light of the moon condensed by a powerful lens, had no effect whatever in altering chemical products, though very sensibly and easily affected by the light of the sun. Another fact is, that the most opposite weather in different parts, take place at the same instant of time, and of course under the same phases of the moon.

It was probably from opinions prevalent in the days of Solomon of certain influences in the heavens, that he was led to make the mild rebuke —"He that observeth the wind shall not sow, and he that regardeth the clouds shall not reap."

From the National Intelligencer.

UNION GOLD MINING COMPANY OF VIRGINIA.

A party of Cornish miners arrived at New York, a few days since, in the ship Boston, of London, and passed through Philadelphia on their way to the Company's Mines. We are informed also, that a large amount of machinery, of the most approved construction, is expected daily. It is gratifying to perceive that the attention of British capitalists has been at length awakened to the great mineral resources of the southern states. It is natural to suppose that native American enterprize will derive much advantage and information from the well-directed operations of the London Company, whom it may be presumed have been very choice in their selection of men and machinery, and from the known success of the Brazilian Mining Company, whose profits amounted to $250,000 per annum. These foreign capitalists may reasonably calculate on a largely profitable return. We now confidently anticipate some fixed results, which will more completely develope and satisfactorily determine the character of the gold region of the southern states. The future conduct of similar operations must be much modified and directed by the successful results of the present undertaking. The skill and science which will be here evinced, cannot fail to save many engaged in similar enterprises from much useless expense and disappointment.

From the New Monthly Magazine.

CAUSE OF FAILURE OF THE POTATO CROP.

Mr. Hickley has communicated to the "Irish Farmer's Journal" a very singular and successful experiment tried upon the potato in the county of Dublin. A gentleman who holds a farm of 150 acres, planted in the usual manner 34 acres under potatoes in 1832; the result was, a complete failure of the crop. This induced him to try many experiments upon the root, all of which failed except the following: he took six potatoes and divided them into twenty cuts; he then got a large basin of water, into which he put a cupful of salt and a piece of blue stone about the size of a walnut. He put ten of the cuts into the basin, and let them remain there one entire night. On the following day he procured a very strong microscope, through which he examined the entire twenty cuts. On the ten cuts which were not immersed in the basin he could distinctly perceive many small white particles like eggs; and those cuts which were not immersed presented no such appearance whatsoever. This discovery urged him to follow up the examination attentively; and every day for a short period, he continued to watch the appearance of the aforesaid matter. The result was, that those white globular particles were animalculæ, for in a few days they became quite visible to the na-

ked eye in the form of worms or maggots. The cuts that had been steeped never showed the slightest appearance of any such thing; and they retained their solidity and firmness when the other ten cuts were completely decayed and rotted. Still unwilling to believe without further proof, he tried the experiment five or six times, and planted them, distinctly marking a division between those cuts which were steeped and those that were not. The consequence was, the almost total failure of one kind and the complete success of the others placed the question beyond the possibility of a doubt. He considers that the air has a powerful effect on the potato, and may sometimes impregnate it with this destructive matter.

From Scientific Tracts.

HAMMERING STONE.

A physician of this city has invented a machine, recently patented, for hammering and facing granite, or any other kind of building stone. The mechanic who constructed a model for the patent office, at Washington, informs us that he considers it in the light of a happy discovery, as faced stone may be shortly afforded as cheap as brick. A number of hammers, weighing not far from twelve pounds each, are set in motion either by steam or water power and move with such rapidity that the fragments fly like dust in a windy day. All the hammers move diagonally across the stone, in two directions, thereby completely levelling and smoothing it by simply passing the block onward under them and back again. One of these machines, on a large scale is being erected at South Boston. Should it answer the expectations of the inventor, the old fashioned method of hammering stone will be wholly neglected as one machine will accomplish as much in a day as twenty or thirty men.

[A wiseacre who conducts a northern paper boasting of some 20,000 subscribers, after publishing the foregoing statement remarked that "this is very well —*provided* that the money saved by the invention shall be given to the stone cutters thrown out of employment by the use of the new process." Having mislaid the paper, we quote the words from memory and therefore probably not exactly—but the luminous idea is not stated incorrectly. Its promulgator is a true supporter of the principles of the restrictive policy—of the protecting duty school: and the same views would have prohibited the first use of ploughs and mills—and in short, every labor-saving implement and process that have benefited the world, and have served to distinguish men in the civilized, from the savage state.]

From the Troy Whig.

BURDEN'S HORSE SHOE MACHINE.

The mechanical skill and inventive power of our townsman, Mr. Burden, appears to be in constant and active exercise. We had the pleasure of examining, a few days since, at the Troy iron and nail factory, a recent invention of his for the manufacture of horse shoes, which, for curious mechanism, and practical importance, is equal to any thing which the genius of *constructiveness* has produced for many years. By the operation of this machine, a heated bar of iron is converted —as if almost by magic influence—into horse shoes, of any size that may be required, that for cheapness, neatness, and smoothness of external appearance—firmness of texture, and practical utility, are greatly superior to the article now in general use. The admirable adaptation of the machine to the purposes for which it is intended, and the great rapidity with which it operates, is truly wonderful.

Extract from Featherstonhaugh's Geological Report, published by order of Congress, 1835.

ACCOUNT OF THE LEAD ORE, AND MINES OF MISSOURI.

* * * * I became now desirous of finding some natural sections that would assist in explaining the phenomena around me, but I could find none, and could hear of none, so that it became necessary for me to examine the localities where mining operations were conducted, in order, by an examination of the subterranean arrangement of the metallic beds, to form some estimate of their direction and extension towards those parts of the country where the public lands lay. I accordingly visited the most ancient "diggings" which had been partially carried on ever since the French had had possession of the country, but I found that the irregular manner in which those diggings had been conducted almost baffled every attempt at systematic investigation. The sulphuret of lead, or "mineral," as it is called in the lead country, has been, in certain localities, at all times found in fragments near the surface of the ground, from the size of a pin's head, in which it can be picked up in great quantities where the rain has washed the soil, to masses weighing several hundred pounds. Sometimes pieces of an intervening size are found, which have been affected by attrition; but, more frequently, the "mineral" preserves its angles very fresh, as it might be expected to do from its brittle cubic structure. Various opinions have been entertained of the cause of so singular a distribution of this mineral substance in loose pieces, and occasionally in such great quantities, near the surface of the earth—a circumstance which has occasioned the whole adjacent country where the mineral has been found, to be excavated into pits from six to twenty feet deep, so that in the localities of such districts it would be impossible to drive any carriage by daylight, and impracticable to ride securely on horseback by night. The disorder into which the country has been thus thrown, is entirely owing to ignorance of the geological structure of the country, and the commonest principles of mining, and is much to be regretted, as it will greatly embarrass future efforts, in those localities, at systematic mining. It would be superfluous to enter into any mineralogical detail of those diggings, or to render a very particular account of any of them, since nothing can be more rude than the attempts at collecting ore which they exhibit. In particular localities immense quantities of sulphate of barytes, or "tiff," as it is named, masses of quartz rock, cellular, and occasionally coated with mammillary crystals of great brilliancy, and, in other instances, a pro-

fusion of dark red clay, are thrown out of the diggings, together with the mineral.

It was at Mine la Motte I first received satisfactory evidence that the broken up mineral I had seen in the diggings had been occasioned by an accidental derangement of the regular structure of metallic veins, and to which I had always attributed these appearances.

The country around presents an extensive table land, almost denuded of timber, through which a few slight streams run, which are used to wash the soil taken out of the shallow diggings. The whole surface is cut out into pits of various sizes, from four feet diameter to some exceeding twenty feet square, with an equivalent depth. These larger areas have been the result of a discovery gradually made, that the loose fragments near the surface, which were formerly the sole object of the diggings, were connected with *mineral* imbedded in the solid rock. Hence, large areas have been opened, without much relation to method, sometimes to the extent of half an acre, and gunpowder is employed to blast the metalliferous rock; so that mining in this particular district is become precisely what quarrying is every where else. The history of these diggings, and the manner in which the sulphuret of lead is often found, is as follows. The streams washing through the superficial gravels sometimes disclose valuable deposites of the ore. Adventurers follow up these indications wherever found, and commence their diggings: when they reach a depth of twelve or fifteen feet, or as soon as it becomes inconvenient to throw out the earth, or hoist out the mineral, a new digging is commenced, and again abandoned for a new excavation. Frequently the superficial soil for about a foot will be red earth, mixed with mammillary quartz, called here "mineral blossom," and petro-siliceous stones; a deposite of red clay of a few feet is then generally found, resting upon a bed of gravel and flinty pebbles, in which the lumps and fragments, including extremely small pieces of ore, are found. Deposites of this kind do not differ, in any particular of mechanical arrangement, from any gravel deposites I have seen, especially the gravel deposites of gold in the southern states, and which are, without exception, the detritus of rocks brought into these superficial beds by aqueous transportation. Beneath these free deposites lies the real metallic formation of the country, consisting of the fetid calcareo-siliceous rock before described, frequently so much decomposed as to admit of being shovelled out, and traversed by horizontal bands of bright galena, or sulphuret of lead, sometimes one inch thick, and frequently a foot thick. In other situations, the ore is very much disseminated in the rock, although always confined in a vein or bandlike breadth, of different dimensions. Where the ore is much disseminated, and the rock is speckled with metallic particles for a great breadth, the ore is usually less productive, yielding about forty or fifty per cent. of lead, when the compact mineral in other situations yields sixty-five per cent. Upon such occasions it appears to contain an excess of sulphur. In some instances, I observed broad veins with a considerable dip, but generally the bands of ore were nearly horizontal. This locality appears to furnish a full explanation of the singular manner in which the ore and sulphate of barytes, in which it is often sheathed, have come into that free and broken situation in which they are found in the superficial deposites. I observed veins at the top of the metalliferous formation, and beneath the superficial deposites, in quarries fifty feet across, and twenty feet deep, containing fragments of ore of various sizes, bright and sharp, with the vein, as well as that part of the rock through which it passed, much shattered and dislocated, the back of the vein being broken in numerous places, and the contents exhibiting strong marks of sudden violence. Sometimes the galena was rent in shivers, sometimes its horizontal sheet was broken up, and parts of the bright ore, ten inches wide, left standing on their edges, some in one direction, some in another, and the remainder left flat in its old place. In some places the phenomena resemble those presented in the chalk cliffs near the Isle of Wight, in England, where the beds are upset, and the seams and nodules of flint shivered. This is not the case, however, with all the veins. In various quarters at Mine la Motte, especially those which go by the name of Mine la Prairie, where more than half an acre of ground has been uncovered to a depth of twenty feet, the sulphuret of lead is not only seen running horizontally in hard compact veins in the calcareo-siliceous rock, but is sometimes disseminated for a great extent, in specks through the rock, affording to the eye sufficient proof that the stony and metallic matter was deposited at the same time; for if either of them were abstracted, no principle of adhesion would be left for the remaining mineral: occasionally the rock changes its character, becoming either calcareous or siliceous altogether, and, indeed, the structure differs so much as to be sometimes hard, sometimes soft, sometimes granular, sometimes compact. Sometimes a bed of sandstone, three feet thick will lie upon a seam of bright mineral six inches or a foot thick, though more generally it is much thinner, and lies in a flat plate. I have however, seen it in veins of two feet thick. The deepest digging or quarrying I observed at this place did not exceed twenty-five feet; they had not yet begun a regular system of sinking shafts and cutting out drifts, but no doubt this will soon be done, as both the public and private lands around the whole region of Mine la Motte are, in my estimation, underlaid by rich veins of galena, that descend very deep towards the central parts of the earth. The superficial indications of this mineral are unerring.

On the approach to a mineral district, numerous localities present a confused, but distinct and rather unvarying character of crystallization. Imperfect nodules of siliceous matter, masses of mammillary quartz, the crystals of which are often superinduced upon chalcedonized concentric layers with an agate structure, indications of sulphate of barytes, with small fragments of sulphuret of lead in the rain furrows, betray the metalliferous rocks: these are the situations which are chosen to commence new diggings in, and with invariable success as far as respects the finding ore. But from some works which have been recently constructed, and which I had an excellent opportunity of examining, I am confident a thorough reform in the whole system of mining in that interesting country is about to take place, and that it will henceforward be conducted upon acknowledged principles, consistent with the true nature of metalliferous

veins, and that economical administration of the mines which will enable them to contribute powerfully to the national resources.

These works, which, when I visited them, belonged to Messrs. Taplit and Perry, are distant four or five miles from Vallée's mines and about twenty-five miles from the point where I observed the quartzose sandstone jut out into the Mississippi. They are situated in a small valley at the foot of a ridge of calcareo-siliceous hills, and abound in the external indications I have before described. The proprietors, disregarding the superficial ores, and confiding in the metalliferous nature of the rock formation, had boldly sunk a shaft, in imitation of some practical miners from England, on the other side of the hill, and had been rewarded with the most perfect success. In sinking this shaft, they had come, at random, at a depth of about sixty feet deep, through decomposing calcareo-siliceous rock, upon a vein of sulphuret of lead, and going down, had reached another horizontal vein upwards of one foot thick, and throwing out from it numerous subordinate veins and threads, into all of which they had cut drifts, wherever the mineral was sufficiently abundant. They had sunk this shaft to a depth of about one hundred and ten feet, when I was there, and very obligingly let me down into it, and gave me every aid and facility in examining their works, which enabled me to observe the very curious structure of these metalliferous rocks, and to form a satisfactory opinion of the geological structure of all this remarkable country.

In pursuing the maine horizontal vein, I came, in succession, to a great number of cavities or pockets—analogous to those of some parts of the gold region in Virginia—in the calcareo-siliceous rock, of various sizes. Some of these caves, as they are there called, are not more than four or five feet across, whilst others are much more extensive. I examined one which was about forty feet from top to bottom, and about thirty-five feet in diameter. The uniform horizontality of the veins would keep the true nature of their origin in great obscurity; but, before I reascended, I had an opportunity of examining what they called the *main channel*, which proved to be an almost vertical vein, filled with compact galena, and about eighteen inches broad. I found the course of this lode to be about N. N. E. and S. S. W., with an inclination of about 18°; and upon examining it further, and reviewing what I had seen before, I had no longer any difficulty in understanding that these horizontal veins, and their subordinate ones, were lateral jets from the main lode, after the manner that Mr. McCulloch has described the structure of the horizontal injections of trap rock into sandstone at Trotternish, in Scotland.* Having made these observations upon the direction of these veins, I commenced an examination of their structure more in detail, and found they were all what is called in some of the mining districts of England *wet veins*, being, without exception, encased, not in sulphate of barytes, but, in pure brigh red argillaceous matter, quite wet below, and cutting with a bright waxy face. This red clay accompanies the galena wherever it goes, always including it as in a sheath, and carrying along with it sometimes nodules of quartz, and of iron, zinc, and galena, which last compound is called by the miners *dry bones*. Every one of the pockets or cavities was filled with this red clay, even the large one I mentioned; but at the bottom of each of them was a thick bright plate of sulphuret of lead, that seemed to have sunk to the bottom by its specific gravity. All these circumstances seem to point to a projection of this metallic and mineral matter from below.* At these mines, when circumstances are favorable, they can raise and bring to the surface, as I was informed, five thousand pounds of the mineral a day—a quantity that could be easily quadrupled if the demand for the metal justified it. This sulphuret yields sixty-five per cent. pure lead of commerce. I had occasion to observe, in numerous instances, that the mineral indications on the public lands were quite as encouraging as at the established mines; but this mineral of lead, to judge from obvious appearances, exists in such inconceivable profusion in the metalliferous region of the south of Missouri and the north of Arkansas, that, like the iron of which I am about to speak, it may be relied on for countless ages as a source of national wealth, and an interminable supply of the most useful metals.

* Vide McCulloch's "Western Highlands of Scotland."

From the Same.

REMARKABLE DEPOSITE OF IRON ORE.

Having completed my examinations of the lead mines, I pursued a southerly course, with the intention of visiting the district of primitive rocks, as it had been described to me, which lies on about the same parallel with the heads of the Merrimack river. At a considerable distance I perceived very lofty hills of a different aspect from any I had yet crossed, and having an abrupt and stony ascent. The rocks upon the slope of the chain are for a considerable distance denuded, and present a well defined syenite. The chain at a distance appears to run N. E. and S. W., but, upon crossing it, and examining it inside, it deflected into a crateri-form, reminding me in some of its features, of some ancient volcanoes I had seen. In various portions of this district I found varieties of greenstone, alternating with some horizontal rocks entirely quartzose, and containing no lime. Upon one lofty hill of syenite I found immense breadths of this siliceous rock, extremely and ponderously impregnated with iron; and at a distance of about a mile from this, the iron increasing in quantity in the intermediate distance, I came upon one of the rarest natural metallic spectacles I have ever seen. Upon a mound sparingly covered with trees, I observed a veinlike mass of submagnetic iron, and having a bright metallic fracture, of a steel gray color. This vein was about one hundred and fifty feet above the surface of the adjacent plain, and at the surface had the appearance of being roughly paved with black pebbles of iron, from one to twenty pounds weight; beneath the surface it appeared to be a solid mass. I measured the vein from east to west full five hundred feet, and I traced it north and south one thousand

* During the eruption off Sicily, in 1832, when the volcanic island was formed, the agitated ocean was filled for several weeks with red mud.

nine hundred feet, until it was covered with the superficial soil. Unusual as is the magnitude of the superficial cubic contents of this vein, yet it must be insignificant to the subterranean quantity. This extraordinary phenomenon filled me with admiration. Here was a single locality of iron offering all the resources of Sweden, and of which it was impossible to estimate the value by any other terms than those adequate to all a nation's wants.* Upon a more minute investigation of the country, I found other similar metallic beds, though not of an equal extent, and all upon the public lands.

Extract from Featherstonhaugh's Geological Report.

NOTICE OF THE PRAIRIES WEST OF THE MISSISSIPPI—THEORY OF THEIR FORMATION.

From the Caddo to Tournois creek, the distance is about fifteen miles, always upon good level soil. Part of the country, however, was sandy, with heavy beds of a bluish green arenaceous clay, containing a trace of lime. I found no fossils or impressions in it, but was induced to believe it was the equivalent of some tertiary beds I had seen near Shirly, on James river, Virginia. The whole of this part of the country almost seems to be underlaid with rotten limestone, derived from broken down marine shells. The country hence for several miles, consists of good bottom land, full of holly and laurel, with occasional hills of old red sandstone of moderate size, with their usual pine trees. Having gone about twenty miles, the country fell again to the south, and I soon came to an important stream which rises to the north west, and empties into the Washita, called the Little Missouri, from its waters being of a dusky red, muddy color. On crossing this stream, I entered upon a dense low bottom of the richest soil, covered with cane, holly, laurel, and swamp timber, intersected by numerous bayous; this lasted for three miles, when the country began to rise a little again; and, after advancing a few miles, I came upon a singularly black waxy soil of a carbonaceous color, entirely different from any thing I had yet observed, except the surface of the travertin, at the Hot Springs, which, as I have before observed, was not dissimilar to this, agreeing further in the profusion of helices and other land shells with which it abounded. The country here appeared to consist of a chain of prairies running westward, and parallel with Red River for a very great distance. Some of these prairies were mere bald spots, of half an acre and upwards, surrounded by plants, whilst others were said to contain several hundred acres. In every instance they were surrounded with a belt of timber and plants peculiar to the country. I was informed by Judge Cross, a gentleman well acquainted with the country, and to whose intelligence and hospitality I owe many obligations, that these prairies extend probably many hundred miles to the west, and that it is an opinion deserving of being entertained, that plants are encroaching upon the prairies generally. It was with sincere pleasure I found myself upon geological grounds, with which I was well acquainted. The prairies were covered with the fossils which, as I have before observed, characterize the New Jersey green sand formations,* but the superficial soil was uniformly of a deep black color, resembling charred wood, and in wet weather is of a waxy, plastic consistency, that makes it extremely disagreeable to move amongst. Its fertility is remarkable, and renders it eminently fitted for cotton, which, as I had many opportunities of observing, succeeds well. The black soil, which is substantially calcareous, contains, as I found from slight experiments, a proportion of carbon.

This was one of the most lovely countries I had seen, a gentle rolling surface and fine woods, in which is an abundance of the indigenous crab apple,† with the beautiful bow wood,‡ or bois d'arc, as it is usually called. On examining where the streams had abraded the lower parts of the land, and digging in various places, I found that all these portions of the country, which consisted of prairie land, were bottomed upon immense beds of rotten limestone, derived from the testaceous remains of the mollusca I have named, entire shells of which in a soft state are still imbedded in the broken down masses once composed of shells. The zone of black land here does not appear to have a breadth of more than five miles; wherever it is, the same fossils are found, with the undervalves profusely scattered around on the surface. Sometimes the black earth gave place to a deep red marl of great fertility, but in this marl I found no shells; they seemed peculiar to the black prairie land. It was evident I was here upon an ancient floor of the ocean, from which we may infer it had retired with comparative tranquillity, the surface being so little disturbed. The broken down marine shelly matter had accumulated into local beds and extensive hill deposites, after the manner in which we know some existing species accumulate, and the general irregularity of the surface was not dissimilar to that which is presented by the various soundings of marine coasts, where recent surfaces are forming. These accumulations are more or less covered with a vegeto-animal deposite, that, by the constantly acting power of the elements, is partially removed, and carried by rains towards the streams; hence this covering is diminished in some places, and thickened in others. In some situations the black soil is two or three feet deep, whilst in others it is only a few inches thick, in which latter situations the tender roots of plants, having in extreme dry weather, to contend with a caustic calcareous bed, are liable to perish; the Indian corn for this reason, is sometimes what is called fired, its leaves drying up and wasting away. These characteristics of the prairie country, as far as this particular zone of prairies is concerned, is common to a vast extent of country to the west of the points I examined. To the east the zone extends from north latitude 33° 40′ to north latitude 32° 30′, in the state of Alabama§,

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* It yields about sixty-five per cent. of fine iron, but is found not to weld easily, which I attribute to an excess of sulphur.

* Gryphæe convexa, exogyra costata, &c. &c.

† Malus coronaria, twenty feet high, ten inches in diameter.

‡ Maclura aurantiaca.

§ Wells, five hundred feet deep, have been dug through rotten limestone, into slate with quartz.

and can be traced at intervals to north latitude 40° 30′, in the state of New Jersey. Throughout this very extended line, all of which I have personally examined, the characteristic shells of this subcretaceous formation have been found. I possess gryphæa, exaggra and other shells, from localities far up the False Washita, the neighborhood of the Kiamesha, from Mount Prairie in Arkansas, from Mississippi, from Prairie Bluffs in Alabama, and from New Jersey, all of them identical; and in the subcretaceous deposites of Alabama, I have found the greatest profusion of the fossil equivalents of the genera peculiar to the green sand beds of Europe. I hope at no distant period to be able to trace, with some precision, the ancient littoral bounds of that geological period, so clearly demarcated by all the unequivocal circumstances I have described.

In relation to those areas which have received the appellation of prairies, from their surfaces, denuded of timber, being at certain seasons covered with long grass, I am not of the opinion of those who think that all prairies have originally been produced by firing the timber annually, and thus, by repeated combustions, destroying the timber as well as the sprouts. That much ground has been denuded by such means, I would admit, and the cause certainly would appear a sufficient one for those prairie districts to which no other cause apparently could be assigned. By whatever method plants begin first to germinate in such deposites, it is evident, as I have before stated, that where the vegetable matter is thin, and the season unfavorable, they are liable to perish; and where they would not altogether perish, it must be remembered that this country was stocked, as the more distant prairies still are, with buffalo, which would, by their periodical occupation of the country in numberless herds, assist in exterminating plants of a vigorless constitution. These may be enumerated amongst the efficient causes of a prairie or meadow state of extensive tracts of country. This view of the subject is somewhat strengthened by the fact of plants, in modern times, encroaching on the prairies; for I have observed they encroach on the sides where vegetable matter has been washed and accumulated, finding a nutritious bed there, into which they can push their innumerable delicate fibres, secured from the devastating teeth and hoofs of the buffalo, which have now all left this part of the country; for where man settles, that animal never remains long. But there is also another view of the subject.

These vast prairies of the west, as well as the diminutive ones in question, must be admitted to be ancient floors of the ocean. When it abandoned them, they were, of course, without plants; and unless we admit their spontaneous growth, we must suppose them to have germinated from seeds derived from plants growing on lands which had been left with a higher level than the ocean, before it receded from these prairies. Their borders would, of course, be planted first, and thus we can conceive of every new generation of plants giving some of its seeds to the winds and the waters, and gradually extending the forests, like the present members of the human family, advancing upon, and settling the country for the uses of posterity. This seems a more natural and just method of accounting for the immense prairies of the west, and the pampas of the southen portion of the South American continent, than conjectural opinions founded on a convenient method adopted by the Indians of securing their game, and which they have practised at all times, certainly with the effect of thinning, but without destroying the timber, as we know from the immense forests of Virginia, Tennessee, Kentucky, Indiana, Missouri, and Arkansas, which were once annually fired by the Indians, to burn the high grass, that they might better see their game—a practice which destroyed the undergrowth, but only thinned the trees; and now that the Indians have left these countries, we find the undergrowth rapidly occupying the ground again. Before we receive opinions altogether hypothetical in relation to the cause of the prairie condition of land, it seems as if we were bound to inquire what was their first condition, consistent with the geological fact that they are ancient floors of the ocean. It, therefore, appears to me to be probable that many of these prairies have never, since the ocean left them, been covered by any vegetables of greater importance than the gramina. Under this view of the matter, it is consistent to suppose, what is personally known to me to be the fact in many observed instances, that trees and plants may be transplanted to those prairies with perfect success.

AMERICAN CEMENT.

The Catskill Recorder thus speaks of this article, which is manufactured by a company in the City of New York:

"The cement, which is at first like ordinary mason's mortar, becomes by age and exposure, as hard as granite itself, and resists the action of frost under any circumstance. We were shown cisterns, well curbs, sections of an aqueduct, and a monument, which were said to have stood in the open air through the last winter, and the summer thus far. These, when struck smartly with a trowel, gave out fire, and a clear ringing sound, which indicates the absence of any flaw. The cement is first moulded, then polished with a trowel, and after it has had time to harden, glass itself could not be more absolutely impervious to water. In all situations where it is desirable either to confine or shut out water, the cement answers every purpose, and is withal as we are informed, a very cheap material. In the process of hardening, it suffers no contraction, and in constructing from it works of any kind, no other care seems necessary than to protect them from being mutilated or defaced; while in a green state. This material is now employed for a variety of uses, and every day calls for its application to some new purpose. We think that it will yet be extensively used in the construction of docks, aqueducts, canal locks and rail roads. The facility with which it may be moulded into blocks of a uniform size and shape, seem peculiarly to recommend it for bed stones on which to lay the rails; and in answering such a purpose, it may very materially reduce the expense of rail roads as at present constructed."

From Meyen's Voyage round the World.

SINGULAR TRADE IN BRAZIL.

Many owners send their slaves for daily employment to the neighboring quarries, while very many others send them out to catch insects: and this is

the reason why the most brilliant insects are to be had so cheap at Rio de Janeiro. When a man has attained to some adroitness in this operation, he may on a fine day catch in the immediate vicinity of Rio more than five or six hundred beetles. This trade in insects is considered very lucrative, six millreis (four rix-dollars, or about fourteen shillings,) being paid for the hundred during our stay. There is a general demand for these brilliant beetles, whose wing-cases are now sought for the purpose of adorning the ladies of Europe —a fashion which threatens the entire extinction of this beautiful tribe. The diamond-beetle (chlamys bacca Kert., and especially the chlamys cuprea, Klug.,) was in great request for brooches for gentlemen, and ten piastres were often paid for a single beetle.

PRACTICAL DETAILS OF MANURING—SINGULAR COLLECTION OF SHELLS AND BONES.

To the Editor of the Farmers' Register.

Charles City Co. Dec. 26, 1834.

In compliance with your request that the members of the agricultural community contribute to advance the interests of agriculture through the medium of the Farmers' Register, I have determined to throw in my mite, contenting myself with the reflection that although this communication may fail to afford either interest or pleasure, yet the motive and object will be duly appreciated, and the manner and matter receive the indulgence of an enlightened community.

The farm on which I reside is a gray soil, lying on a substratum of yellow sand, with the clay at the distance of from eighteen inches to two feet below the surface. It had been reduced to the lowest degree of poverty by the system practised by our ancestors, when I came into possession of it in 1823. I immediately cast about in my mind for means and resources for improvement. The object was to sustain my family, and at the same time improve some land. I therefore immediately enclosed a lot of ten acres, which was improved and cultivated in corn and peas for several years in succession. The corn was planted five feet each way, with as many pea hills as corn hills. It was gathered and shucked out as early as the corn would bear gathering, and my hogs turned upon the peas. This lot added from sixty to eighty barrels of corn to my crop annually, whilst the peas assist very much in fattening my hogs. Indeed, I know nothing better than a field of green peas to put hogs in a thriving condition, and prepare them for the pen. Another lot of eleven acres was now added to the first improved and cultivated for several years in succession (through necessity) either in corn or wheat. The production of these lots very soon convinced me of the value of improved land—having reaped for two crops in succession, twenty bushels of wheat for one seeded, from land, which had not within the memory of any man living, produced more than five or six for one. Having now come into possession of other land I was enabled gradually to extend my improvement to the field-system, collecting materials from every resource in my power, which are carried through the stables, farm pen, hog pen, &c.

The farm pen, or shelter, is situated about the centre of my arable land—within forty yards of the barn and stables, where each field corners. It is built of pine slabs on cedar posts put in the ground in the form of an octagan, closed entirely around except a space of fifteen feet on the south side to admit the stock. The yard is graduated to the centre in the form of a shallow basin, which receives the water, and retains it in the vegetable mass, and being too shallow to retard decomposition or putrefaction, yet retains the essence of the manure, so that nothing is lost. In this pound the cattle are penned every night through the year, and during the winter both day and night, except for a short period in the evening when they are turned out to water. I know that in this respect my practice is different from most of our best and most experienced farmers: but from experience I am induced to believe it suits my situation and circumstances better than the more common mode of summer cowpens. The stables are well supplied with a fresh bed of litter every night, and their contents suffered to remain until the mass becomes twelve or eighteen inches thick, when they are cleaned out, and the manure removed immediately to the standing farm pen, spread regularly over the yard, and covered with straw or pine leaves. I always prefer removing the stable manure to the farm pen during a rainy season, or to anticipate a rain, as the essence of the stable manure will be immediately carried down into the bulk below, and mixed with the whole mass. Loads of pine litter from the woods are always carted in previous to carrying in the stable manure, for the purpose of protecting it from the sun and atmosphere.

Under this system the additional labor of hauling the manure made in summer to the field is incurred, but I am satisfied that a much larger space can be manured during the same period, than by the usual mode of summer cow pens. I act upon the principle that labor directed to the raising and applying manures rarely, if ever, fails to remunerate the farmer—one acre of good land being, in my estimation, worth ten, or perhaps twenty, of such as is really poor. This farm pen is cleared of its contents twice a year, in December and April. The manure accumulated from the last of April to December, is then carried to the field intended for corn, deposited in heaps according to the strength of the land, and is covered with common earth, if it is to remain for even a few days before being turned in the land. The manure is thus protected from the sun and atmosphere, and a portion of that which would have escaped, imbibed and retained by the cover of earth, which becomes the more readily mixed with the soil to assist in the process of vegetation. A brisk boy of fourteen or fifteen years old will cover the heaps of manure as fast as a good team of oxen and three horse carts can carry it to the field—say a distance of 700 yards. The manure made during winter is all carried out and ploughed in, as before observed, for the corn crop in the spring, and the only litter used in the farm pen up to this period, consists of straw and pine leaves. Immediately after carrying out the manure in spring, we commence carting in corn stalks, which is continued until they are all used. This mode of using the corn stalks is preferred, because they are not so soon converted into manure as straw, or litter from the woods, and they have a longer period to remain in the farm pen through summer.

All the manure made is applied to land pre-

viously marled—a very fine bed of which I have near the centre of my arable land. My marl is that which I think is generally termed yellow, being a decomposed mass of various kinds of shells tinged with clay. No sand is discovered in it. I have applied only 200 bushels to the acre, and believe from several experiments made on a small scale, that quantity sufficient for my land. There are several indications of marl in my neighborhood—and a deposite has recently been discovered of very good quality. I have but little doubt that many deposites of this valuable manure are yet to be discovered, and that our worn-out and neglected country is destined to be brought to a state of gradual improvement.

On my friend Col. J. S. Stubblefield's farm, on Chickahomony, there is found a curious deposite of muscle shells, extending on the bank of the river about one hundred and fifty yards on a level with the flat land, and covering a breadth of from thirty to forty yards. These shells are found on the surface, and extend to the depth of from three to four feet, imbedded in rich black mould. This deposite contains a considerable portion of carbonate of lime, and has been used extensively by Col. S. who is an industrious and enterprising farmer. In this deposite of shells are found a number of human bones of all sizes, from the smallest infant to the full grown man, interred in pits of various size, and circular form; and in each pit are found intermingled, human bones of every size. Standing in one place I counted fifty of these hollows, from each of which had been taken the remains of human beings who inhabited this country before the present race of whites. These remains differ in several particulars from the Indian burying grounds heretofore discovered among us. Might they not furnish curious matter of speculation to the antiquarian? It is time I should bring this desultory communication to a close.

JAMES H. CHRISTIAN.

From the New York Farmer.

DRY ASHES DESTROY LICE ON FOWLS.

When confined, or when simply roosting, in an inclosed house, hens are apt to become infested with lice, in the warmer months. Dry wood ashes, put on the ground where they dust themselves, will, says a farmer, who has given much attention to poultry, very soon entirely free them.

S. F.

From the last London edition of the "Complete Grazier."

ON THE BREEDING, REARING, AND FATTENING OF SHEEP.

Introductory and comparative view of the different breeds of British sheep.

Among the various animals given by the benevolent hand of Providence for the benefit of mankind, there is none, perhaps, of greater utility than the sheep; which not only supplies us with food and clothing, but also affords constant employment to numerous indigent families, in the various branches of the woollen manufacture; and thus contributes, in no small proportion, to the productive labor, the commercial prosperity, and the opulence of this highly-favored island.

In a wild, or natural state, the sheep is a vigorous animal, lively, and capable of supporting fatigue; when domesticated, indeed, it loses much of these properties, but amply compensates for the absence of them by the superior advantages arising from the rearing of this sort of stock. In fact, on most soils, sheep constitute a material part of a farmer's live stock and profits; and as particular attention has, of late years, been bestowed on the improvement of the respective breeds, we shall first present the reader with an introductory view of them; which will, we trust, convey an adequate idea of the different varieties, together with their specific characters, and the peculiar advantages they respectively possess. The general management of these animals will afterwards form a subject of discussion.

Naturalists maintain that all the varieties of different animals, of the same species, have been derived from one parent stock; and, arguing upon this hypothesis, the origin of our native breeds of sheep has been deduced, by some from the *moufflon* of Corsica, and by others from the *argali* of Siberia, both of which still exist wild in the mountains of those countries. The moufflon is, however, mentioned by very ancient authors as a distinct animal, and, indeed, it appears to partake more of the nature of the goat; but the argali, which is spread throughout Asiatic Russia, and many parts of Persia, has much of the appearance, and many of the habits, of the common sheep. Whatever degree of credit may be attached to this conjecture, it is certain that sheep were found in a domestic state in England at the earliest period of which we have an account; it is also probable, that they were then of one species only—the small horned kind; and there can be little doubt, that the various breeds in existence at the present day, have gradually arisen through the progress of cultivation, and experiments in crossing, as well as from those differences, which will naturally arise, when they are long confined to soils of opposite quality. It might prove an object of curious research, to trace the improvements that have been made in this important branch of rural economy; but, this treatise being intended solely for the use of men of business, our inquiries are necessarily confined to the actual breeds that compose the present stock of the country, of which the following are the chief.

I. The *Heath*, *Linton*, *Short*, or *Forest Sheep*, are names indiscriminately given to the several varieties of the same breed, which is found in the north-western counties of England, and thence forward to the western highlands of Scotland.

The specific characters of this race are, large spiral horns; faces black or mottled, and legs black; eyes wild; carcass short and firm; wool long, open, coarse and shaggy; fleece averaging about three pounds and a half at four years and a half. They are of a hardy constitution, admirably calculated for elevated, heathy, and exposed districts; and, judging from this aptitude to support the hardships of constant exposure in a wild pasturage country, as well as from the form of the horns, which is characteristic of the animal in its unimproved state, it may be not improbably inferred, that they are directly descended from the parent stock of the kingdom. The true black-faced breed, is said to be distinguished by a lock of white wool on the forehead, termed the snow-lock.

In moorland tracts, where the pasturage consists rather of heather than of green herbage,

these sheep have been found more valuable than some which, in more favored situations, might be considered superior; and although they have been superseded in some instances, yet they still maintain their ground on the bleak hills of the north, many of which, indeed, would be wholly unproductive to the farmer under any other stock: their flesh is highly flavored; and when fattened on the lowland pastures, they make excellent mutton. There is another moorland breed, of an unmixed race, existing on the Yorkshire wolds, which differs from the former, in having the face and legs white, with a thin flat carcass; but in point of hardiness of constitution, and the characteristic distinction of large horns, it is nearly similar. Both range over the heathy mountains in the summer, without any attending shepherd; and, on the approach of winter, they are brought nearer to the enclosed grounds, that hay may be given to them during deep snows, and also that they may be prepared for the severity of the season, by being salved: an operation which will be hereafter more particularly described.

The other *horned breeds* of English sheep are—

II. The *Exmoor* and the *Dartmoor*, which derive their names from the districts in the northern and western parts of Devonshire, where they are chiefly found. They are long-woolled, with white legs and faces, and are delicately formed about the head and neck; they make very finely flavored mutton; and arrive, when fatted, at two and a half to three years old, to fourteen and sixteen pounds weight per quarter.

The country in which they are reared, is generally over-charged with water, after the autumnal rains, yet this breed sustains the chill of the wet ground even in the infant state, without becoming subject to the rot, which has proved fatal to some other species that have been attempted to be introduced, and even to crosses. Their summer pasture is scanty, and their winter food consists chiefly in what they can pick up, in ranging over extensive tracts of pasturage, with the assistance, in the severity of extremely bad weather, of a little indifferent hay, made from the coarse herbage of the moors; and perhaps occasionally with a small supply of turnips, which are sometimes cultivated, but which, from the wetness of the land, they are often prevented from resorting to when most wanted. From this superior hardiness of constitution, and more especially from their power of resisting wet, which is generally so injurious to sheep, nature has evidently adapted them to the soil; it is not, therefore, to be much wondered at, that the attempts made to improve them by crosses with more tender breeds, have not been attended with all the success that was expected. A cross with the old Leicester sheep has, indeed, increased the weight to twenty-four pounds per quarter; and another, with the Spanish merinos, has improved the quality of the wool; but the foot-rot and the scour have in both instances made great ravages; and until some effectual system of drainage be adopted, by which the pastures may be rendered dry, and shelter be provided by enclosures, the most rational hope of improvement must rest upon increased attention to the native race.*

* See the Agricultural Survey of Devonshire, p. 338.

III. The *Norfolk Breed* is indigenous in the counties of Norfolk and Suffolk. The horns are large and spiral; bodies long; loins narrow, with a high back and thin chine; the legs long, black, or gray; of a roving, wild disposition, and not easily confined within any but strong enclosures. The wool of the original breed was short, the fleece weighing from two to two and a half pounds; but within the last twenty years, in consequence of crosses and new modes of feeding, the weight has been increased full a pound, and the greater part is now used for combing purposes.* The carcass has been proportionably increased; and though the mutton has not been thereby improved, it yet is well flavored, and of a fine grain, but only fit for consumption in cold weather.

The agile form of these sheep, enabling them to move over a great space of ground with little labor, was of vast advantage to the old Norfolk farmers, many of whom were possessed of large tracts of heath-land, which they had no means of bringing into cultivation, except by the assistance of the fold. Mr. Marshall characterizes them, in his account of the Norfolk husbandry, as being singularly well adapted to the soil and system of management prevalent in that country: thriving upon heath and barren sheep-walks, where nine-tenths of the breeds in the kingdom would starve; standing the fold perfectly well, yet fatting freely at two years old, and bearing the drift to distant markets with comparative ease. Mr. Kent has been equally warm in their praise in his survey of the same county; yet notwithstanding these strong testimonials in their favor, they have long been giving way to the more fashionable Southdown breed, which has now taken possession of nearly all, except the most barren and sandy districts of the county.†

IV. The *Wiltshire Breed* are distinguished by large spiral horns bending downwards, close to the head; they are perfectly white in their faces and legs; have long Roman noses, with large open nostrils; are wide and heavy in their hind quarters, and light in the fore-quarter and offal, but with little or no wool on their bellies. The quality of the fleece is that of clothing wool of moderate fineness, averaging nearly three pounds in weight; and the carcasses of the wethers, when fat, usually weigh from 70 lbs. to 90 lbs.: the mutton good: they sometimes, however, reach much higher, and may be considered as our largest breed of fine-woolled sheep.

The county of Wilts, being in great part composed of downland, the same necessity exists there, as upon other light soils, of maintaining large flocks of hardy constitutioned sheep for the purpose of folding; to which the old stock of the country was well adapted. But the improvements in the modern system of agriculture, by the introduction of green crops instead of fallows upon light land, having enabled the farmers to supply their flocks with better winter food than the bare pastures on which they were previously kept, the

* Evidence before a Committee of the House of Lords on the wool trade, in 1828. Printed report, p. 129.

† Agricultural Survey of Norfolk, by the Secretary to the Board; Kent's ditto; and Evidence of Mr. Fison before a Committee of the House of Lords, on the British wool trade, 1828, p. 194.

size of the present race has been increased, and the form has been improved by crossing. It is, however, said, that they have become less hardy, and worse nurses; and, in particular, so very nice in their food, that they will starve on the same kind of land where the former sort of smaller and more compact sheep lived well. Another serious consequence of the change is also said to have been produced by this delicacy of appetite—that by rejecting the feed of the downs, on which the chief dependence of the flock master rests, the herbage has gradually grown coarser; which evil has been further increased by the consequence of shortening the stock previously kept; it being a well known fact, that, to a certain extent, the closer the downs are fed, the more sheep they will support.* But it is more probable that the greatest injury done to the downs has been occasioned by the system, pursued during the high prices of corn, of breaking them up, and after exhausting them by repeated cropping, then laying them down with artificial grasses which soon wear out, and coarse natural grasses then take possession of the land, instead of the finer sward with which it had been previously covered.

It has been also found that the quality of the wool has been injured by the new system of feeding; and in this county, as well as in Norfolk, the native breed has been nearly superseded by that of the Southdowns.

V. The *Dorset Breed* have small horns with white faces and legs: the wool of the pure breed is of an intermediate kind, between long and short, and of middling fineness, weighing from three and a half to five pounds per fleece; and the carcass averaging eighteen pounds per quarter, of excellent mutton. But great numbers of Southdown sheep are bred in the county, and in many instances the blacks have been intermixed, and the character of the original stock proportionably altered. They are a hardy race, being chiefly bred on open downs, and inured to the fold; but their principal value consists in the peculiar forwardness of the ewes, which take the ram at a much earlier period than any other species, and are therefore much sought for, and command high prices for the purpose of producing house-lamb for winter consumption.

The Dorset sheep are chiefly to be found in the county from which they take their name, and in the neighboring borders of Devonshire; but a variety of the same breed occurs in *Dean Forest*, and on the *Mendip Hills*—a small compact animal, that will thrive on the poorest soil and fatten on such land as will scarcely keep other sorts alive. Pasturage ever so dry and exposed will feed this kind: they are very hardy; their wool fine; and the mutton is also excellent for the table, being full of gravy and of a rich flavor.† The Mendip Breed resembles, in many points, the merinos; and there is a tradition that the original stock of the Spanish fine-woolled sheep was obtained either from those hills or from those of Cotswold, in Gloucestershire; but the breed now prevailing in the latter district bears no likeness to them.

The *Polled Sheep* may be divided into two classes—the *long*, and the *short-woolled*—the peculiar merits of which have for many years formed a subject of discussion among agriculturists. Each has valuable properties, and efforts have been made to blend them, by crosses, but hitherto without complete success: nature seems to have intended them for different soils, and the short-woolled breeds, which thrive upon the bleakest hills, degenerate when removed into rich pastures, which are alone capable of maintaining the long-woolled species.

VI. The *Leicester* sheep take the lead among the *long-woolled kind;* and of these there are three nearly distinct species:—

1. The *Forest Sheep*, which, though not confined to the open district of Charnwood Forest, were probably the common field stock and original breed of the county. They are mostly polled, though some have small horns; are generally white, but sometimes gray-faced, with legs of the same color; are covered with coarse combing wool; and are altogether an inferior race.

2. The *Old Leicester*, which are probably descended either from the still more ancient stock of Charnwood, improved by better feeding, and by crosses with rams from the rich pastures of Lincolnshire; or from a large-boned, coarse-woolled breed, long common to the midland counties. They are large, heavy, flat-sided, strong in the bone, and somewhat coarse in the offal and pelt; but full of wool of a combing quality. They are well adapted for the rich, deep, feeding soils, upon which weight of mutton and of wool are more material objects for profit than fineness of quality; and, on such lands, the rams are commonly brought to weigh forty pounds the quarter, with a fleece of twelve to fourteen pounds.

3. The *New Leicester*, or *Dishley Breed* are an improved kind of the old species. Their forms are handsome; color white. Their heads are clean and small, their necks short, and their breasts full; their bodies are round, with broad, straight backs, but the bellies rather light, or tucked up; their legs and the whole bone are fine, and particularly small in proportion to their size; their pelts thin, and the wool long and fine of its kind, generally averaging seven pounds to the fleece. They are of a quiet disposition, fatten early and kindly, and are capable of being brought to a great weight, on a smaller proportion of food than other breeds of the same size, the fat wethers generally weighing (when shear-hogs) twenty-five pounds per quarter, and the ewes twenty-two pounds: the flesh is fine grained and well flavored, but too fat to please most palates.

The final improvement of this breed is unquestionably due to the late Mr. Bakewell; but there are various opinions respecting its origin. Mr. Marshall attributes it to one Joseph Allom, of Clifton, in Leicestershire, who, from being a plough-boy, raised himself by industry to the situation of an eminent farmer, and was the first who distinguished himself, in the midland district, by the possession of a superior breed of sheep. He was known to purchase his ewes at a distance, and it has since been ascertained that he chiefly obtained them in the Melton quarter of the county; but, in whatever manner he raised his breed, it appears certain that it was in high estimation before Mr. Bakewell's time, as it was customary for the most careful breeders to resort to Clifton for

* Agricultural Survey of Wilts, p. 142.

† See the Agricultural Survey of Somersetshire, 3d edit. p. 145.

ram-lambs, for which they gave the then extraordinary price of two and three guineas each: it has, therefore, been not improperly conjectured, by Mr. Marshall, that through the means of Mr. Allom's stock, the breed had passed the first stage of improvement before Mr. Bakewell's day.*

Another author† acquaints us—upon the authority of a gentleman long resident in the county—that about the year 1747 there was a succession of bad seasons, which occasioned a great rot in the sheep upon the clay-lands, that in a short space swept away whole flocks. Some of the small farmers were ruined; but the more opulent and enterprising resorted to the high grounds near Fridaythorpe, in Yorkshire, where they purchased some small neat sheep, which, crossed with the few that remained in their own fields, produced some very useful animals. As the numbers bred for a long time afterwards were not equal to the demand, they sent year after year to the same market: jobbers were established, who employed themselves in purchasing sheep on the Yorkshire wolds, for the use of the Leicestershire graziers; and, it is said, that Mr. Bakewell engaged these men not to offer their sheep to public sale till he had seen them, and had taken such as suited him. From these droves, or from the flocks so bred in his own neighborhood, and probably from a cross with the Lincolnshire, he bred his first short-legged, square-framed sheep, which were so well received that he went on breeding from his own stock, or crossing with any others that he judged most likely to attain the perfection at which he aimed; by which means, and partly, as it has been thought, by a cross with the Durham sheep, he by slow degrees produced the celebrated breed since distinguished by the name of the farm on which he resided. To him, therefore, may be justly conceded the merit of having effected this valuable improvement; but he has left many able disciples, who have followed closely in his steps, and have even so improved upon his system, that not only Leicestershire, but many of the neighboring counties, may now boast of possessing the breed in the highest perfection.

Many good judges are, however, of opinion, that the endeavors to improve the old breed have been carried too far, and that the introduction of the Dishley stock has reduced the quantity of mutton and wool in a much greater proportion of value, than it has improved the quality. It is admitted, that much good was effected by the early crosses, and that the New Leicesters feed quicker, and come sooner to market than the old; but they are deficient in inside fat, and are said to carry their flesh more upon the loin than in the leg; which are both serious faults in the eye of the butcher. It is also alleged, that too much value has been placed on fineness of bone, and that, in attaining that object, the constitution of the animal has been sacrificed; even, in many instances, to the destruction of the generative power in the ram.

VII. The *Lincolnshire Breed* so nearly resemble the old Leicester, that they require but little further description. They have white faces and legs, the bones large, and the carcass coarse; the back long and hollow, with flat ribs, but good loins, and a deep belly; forward loose shoulders, a heavy head, with a large neck, and sinking dewlap; the hind-quarter broad, the legs standing wide apart, and a large dock. The pelt is particularly thick, and the fleece consists of very long combing wool, of a rather coarse quality, but weighing generally from twelve to fourteen pounds on the wethers, and from eight to ten pounds on the ewes. The flesh is open-grained, and inferior to the mutton of the New Leicester, and particularly to that of the small, short-woolled breeds; it is besides subject to be yellow, which is a great defect at market, but it frequently reaches the weight of thirty-five pounds per quarter; and fat wethers generally average twenty-five.* This description, however, applies rather to the old breed of Lincolns, as well as of Leicesters, than to the sheep now commonly ranked under those denominations; for, owing to a judicious intermixture, not carried too far, of the Dishley blood, many of their imperfections have been rectified, while they still retain the valuable properties, so essential on rich soils, of great weight of fleece and carcass, and have further acquired some of the distinguishing marks of the improved breed, in the increased cleanness of the head, straightness of the back, and general symmetry.

VIII. The *Teeswater Breed*, another variety of the old long-woolled species, was formerly the stock of the northern part of the Vale of York, and of Cleveland; but it has, of late years, undergone so great a change, by crosses with Dishley rams, and their descendants, which were introduced into the north, by Messrs. Culley, about the year 1766, that the original race is now but rarely to be met with.

In their pure state, the Teeswater sheep are very large, coarse-boned, slow-feeders, and their wool is dry and harsh; but they arrive at greater weight than any other breed in the kingdom; the three year old wethers reaching to upwards of thirty pounds per quarter,† and producing a fleece of about eleven pounds. The ewes are singularly productive of lambs, twins being not only common, but three, and even four, being sometimes produced at a birth.

A variety of this race, which formerly occupied the lower district of Northumberland, were called *Mugs*, probably, as the surveyors of that county suggest, "from their faces being covered with a muff of wool, close to their eyes:"‡ but they have

* Rural Economy of the Midland Counties, 2d edit. Vol. I. p. 338.

† Mr. Pitt, of Wolverhampton. Agricultural Survey of Leicestershire, p. 249.

* Agricultural Survey of Lincolnshire, 2d edit. p. 403.

† A four shear sheep of this kind, bred by Mr. Thomas Hutchinson, of Sockburn, and killed at Darlington, in December, 1777, weighed 62 pounds per quarter; and another, belonging to Mr. Dinsdale, of Newsham, weighed 54 pounds. A wether, rising three years old, bred by Mr. Powley, of Thorndon-Stavard, and killed in January, 1799, weighed 59 pounds per quarter; and a lamb, five months old, bred by Mr. Henry Hutchinson, weighed 22 pounds per quarter. See Agricultural Survey of Durham, p. 248; and Agricultural Survey of Yorkshire, North Riding, p. 260.

‡ Agricultural Survey of Northumberland, by Messrs. J. Bailey, and G. Cullep, 3d edit. p. 150.

given way to the Dishley breed, or have been so improved by crosses, as to retain but little of their original appearance.

The value of this species of stock may be in a great degree estimated by its aptitude to increase in flesh at an early age, and when no particular means of fatting are used; of which the following account of four, fed by Mr. Mason, of Chilton, affords a fair specimen:—

Lambs. Wt. Aug. 15, 1803.	Shearlings. Wt. 4 Oct. 1804.	Gain	Two Shear. Gained to 15 Oct. 1805.
lbs.	lbs.	lbs.	lbs.
92	202	110	34
82	193	111	38
87	216	129	32
91	199	108	28
352	810	458	132
88	202½	114½	33

Thus, the weight gained from five months to one year and seven months old, is 114½ lbs., or at the rate of 1 lb. 15 oz. per week; but from that age to two years and seven months old, the gain in weight is only 33 lbs., or 10 oz. per week.*

IX. The *Romney Marsh* sheep have existed immemorially on that rich tract of grazing land, on the southern coast of the counties of Kent and Sussex, from which they take their name. In their pure state, they are distinguished by white faces, a considerable thickness and length of head, and a broad forehead, with a tuft of wool upon it; a long and thin neck, and flat-sided carcass. They are wide on the loin, but have a sharp chine, and the breast is narrow, and not deep; the belly large; a good cleft; the thigh full and broad, carrying the chief weight in the hind quarter; the tail thick, long, and coarse; the legs thick, with large feet, the muscle coarse, and the bone large. The wool is a good combing quality, the fleece of fattening wethers weighing from eight to nine pounds; the mutton is equal to that of any of the large polled breeds, and their proof being good, they are favorites with the butchers. When fat, the wethers usually average from ten to twelve stone each, and the ewes from nine to eleven.† They are very hardy; are bred with little care, on wet and exposed land, requiring, after the first year, when they are wintered on the uplands, no other food in the severest situation, than occasionally a little hay, in addition to their pasture; and are fattened entirely on grass.

Within these few years, the fashionable Leicester breed has been introduced into Romney Marsh, and the cross has, no doubt, improved the form of the native sheep; but its effect, in the opinion of a very competent judge,‡ "has evidently been that of reducing the size of the animals, and making the wool coarser, but giving them a better disposition to fatten." The rage for Leicester sheep seems, however, to have subsided among the marsh graziers, and the ram breeders are now anxious to make it appear, that their stock is unmixed with the Dishley blood; though, in truth, there are but few, if any, flocks without at least a remote dash of it. Besides the diminution of weight of carcass, and the deterioration of the fleece, the Leicester breed has been found too tender for the cold and open pastures of the marsh. The breeders complain that they suffer great losses from the delicacy of the lambs, and the ewes are found neither to produce so well, nor to be such good nurses as those of the original race; but the improved disposition to fatten must be allowed to be of great advantage. Mr. Price, who has been already quoted, informs us, "that, at no very distant period, the wethers seldom reached market till three years old, but now two years old wethers, and sometimes even yearlings, are sold to the butchers;" and he adds, as his opinion, "that this variety may be made the most valuable in the kingdom for rich pastures, as producing most meat at the least expense, and thus afford the grazier the greatest profit."

X. The *Devonshire* polled sheep form two distinct varieties of the same breed:—

1. The *South Devon* or *dim-faced Nott*, with brown face and legs; a crooked backed, flat-sided, coarsely boned and woolled animal, carrying a fleece of ten pounds average weight, and averaging 22 lbs. per quarter of good mutton, at thirty months old.

2. The *Bampton Nott*, with white face and legs, though in other respects nearly resembling the former in appearance; but the wethers will, at twenty months old, average as much weight of carcass as the others at thirty, and, if kept on for another year, will reach, when fat, as much as 28 lbs. per quarter. They are not, however, equally productive of wool; for, at the first period, they only yield about 6½ lbs., and at the latter, 8 lbs.

Considerable improvement has been effected in the form of these sheep, as well as in most other of the long-woolled breeds, by crosses with the *new* Leicesters, and a greater aptitude has been acquired to fatten at an earlier period; but while many of their defects have been thus cured, the same complaints are made, as in the other instances already noticed, of increased tenderness in the lambs, which are found to require extraordinary care and nursing, yet often perish through the severity of the weather: also of a very material diminution in the weight both of the fleece and carcass; the former being reduced from ten pounds to eight, and the latter from twenty-two pounds to nineteen pounds per quarter. They are likewise bare of wool upon the belly, which occasions great injury to animals constantly lying out, and much exposed to wet; none of which disadvantages have attended a cross with the *old* Leicester, which has, on the contrary, increased the weight of flesh, as well as the disposition to fatten.*

Another variety of long-woolled sheep is found on the *Cotswold Hills*, to which most of the remarks already made on the Devon breeds will equally apply.

The chief of the *short-woolled* breeds are—

* Durham Agricultural Survey, p. 253.

† Price, on the Management of Sheep in Romney Marsh, 4to. Ch. II. p. 109.

‡ Mr. Boys, of Betshanger. Agricultural Survey of Kent, 2d edit. p. 174.

* Vancouver, Agricultural Survey of Devonshire, Chap. XIV. Sect. 2.

XI. The *Southdown*, of which the specific characters are—faces and legs gray; bones fine; head clean; neck long and small; low before; shoulder wide; light in the fore quarter; sides and chest deep; loin broad; back bone rather too high; thigh full, and twist good; wool very fine and short, (the staple being from two to three inches in length,) weighing an average of three pounds and a half per fleece, when killed at two years old. Flesh fine grained, and of excellent flavor; quick feeders; constitution hardy and vigorous. They are round in the general appearance of the barrel; and, from standing wide on their hind legs, and being shut well in the twist, the leg of down mutton is remarkably round and short, not only cutting handsomely for the table, but weighing heavier than common in proportion to the fore quarter—which are material advantages to the butcher, as they command a ready sale, at an advance of a penny per pound over the other joints. Fat wethers usually average about 18 lbs. per quarter; but this has been, in many instances, increased by late attempts to improve the size of the carcass. Whether these have been judicious, time alone can determine; but it does appear from the evidence of some of the persons examined before a select committee of the House of Lords, appointed in 1828, to take into consideration the state of the British wool trade, that they have injured the quality of the fleece.* This has, indeed, been denied by the breeders; but in all other instances, it has been uniformly found that efforts to increase the flesh have been attended with similar effects. In the present state of the wool trade, this may, however, be of less consequence than it might have been some years ago, for it appears from all the concurrent evidence produced before that committee, that the British carding, or short clothing wools, have been entirely superseded in our manufactories, by the German and other foreign kinds. But too great an increase of carcass may also injure the quality of the mutton, which is now of the very finest kind.

These sheep have been bred for ages past on the chalky soils of the Southdowns, in Sussex, and on such short pasture, and in such exposed situations, they are perhaps the most valuable breed in the kingdom; but they are spreading fast not only into similar districts, but into counties better calculated for long-woolled and larger sheep. That the breed will, on those rich soils, degenerate in the superior properties of their flesh and wool, there can be little doubt; but it will still be matter of calculation, whether that disadvantage may not be more than balanced by superior weight. On their native downs, it will probably be found better to preserve them as near to their original size as possible: for, if too large for the constitution of the soil, it will be difficult, if not impossible, to maintain the increase of weight; or, if maintained, it probably will be with some loss either of the hardiness or activity requisite to their thriving on the land for which they are most appropriate; or with detriment to the qualities of the flesh and wool; and thus an apparent advantage may lead to serious future injury.

XII. The *Cannock Heath* sheep are bred upon an extensive waste, so named, in Staffordshire; they are very generally gray faced; without horns; bear fine wool; and from many points of similitude between them and the Southdown breed, it has been thought that they were originally derived from the same stock. The bone, however, is coarser; nor do they possess the same beauty and compactness as the downs; but these defects probably arise from inattention on the part of the former breeders, which the present flock-masters are making efforts to rectify; and, to counterbalance them, the carcass is heavier, and the mutton equally good.

XIII. The *Ryeland Breed* is so called from a district in the neighborhood of Ross in Herefordshire. They are small, white faced, and hornless; the wool growing close to their eyes; are light in the bone; have small, clean legs; and, when proper attention has been paid to the breeding stock, possess great compactness and symmetry. The ewes weigh from nine to twelve and fourteen pounds, and the wethers from twelve to sixteen pounds per quarter, when fatted, at three to four years old, and their flesh is equal to any mutton in the kingdom. The fleece does not average more than two pounds; but the quality of the wool is unrivalled by that of any of our native stock. They are patient of hunger, and no breed is supposed capable of subsisting on a smaller quantity of food; they are, therefore, adapted to the pasturage of down land; but they require a fine herbage, and are so tender as to require shelter in the winter; and particularly at the time of lambing. They are not, as many persons imagine, wholly a mountain breed, being kept in the vale lands as well as on the hills, and are often fatted on the same soil with the Hereford oxen.

A cross has been made between this breed and the Spanish sheep, the produce of which are termed *Merino Ryelands*, and the wool *Anglo Merino*. The first stage of the cross materially detracts from the beauty of the Ryeland's form; but the fleece is much improved both in weight and quality, and the carcass is increased, while the flavor of the mutton remains uninjured. It has been affirmed, that the characteristic properties of the Merino Ryelands correspond with those of the Spanish race as far as the fourth generation, and that the wool is nearly of equal quality to that of the pure merino. Great exertions were made by the late Dr. Parry, of Bath, and other spirited wool-growers to introduce them to general notice; but it appears, from the evidence produced before the Committee of the House of Lords, already mentioned, that this new breed has declined; and that, either from the general depreciation in the value of short wool, or, as some allege, from deterioration of the quality of this species, the anglo wool is now nearly unsaleable, though it still commands a higher price, when sold, than the finest pure British.*

* See the Evidence in the Printed Report, of Mr. C. Bull, of Lewes, Woolstapler; Mr. Sutcliffe, of Huddersfield, ditto; Mr. Brooke, of Honley, near Huddersfield, Cloth-manufacturer; Mr. G. Goodman, of Leeds, Wool-factor; and of Mr. Sheppard, of London, Blackwell-Hall factor, Chairman of the London Committee of the Woollen Trade.

* See the evidence of Mr. Cunnington, of Upavon, Wilts, Woolstapler; Mr. W. Ireland, of London, and Chalford, in Gloucestershire, Manufacturer; and of Mr. G. Webb Hall, of Sneed Park, Gloucestershire, Farmer.

Another cross has also been attempted between the pure Ryeland and the new Leicester breeds; but although the weight of the carcass has been thereby much increased, yet it can only be supported on land of a much richer kind than that on which the native sheep are usually fed, and it is probable, that if persevered in, on such soils, it would materially injure the mutton, while its immediate effect was certainly detrimental to the wool.*

In some of the neighboring counties to Herefordshire, both in England and Wales, there is a breed of sheep very much resembling the Ryelands, known as the *Shropshire morf.* They bear wool of a fine quality; generally have white faces and legs, though sometimes a little freckled; are light in the bone, and have small clean limbs. There are two species, which, from inattention to the breeds, are often blended. The one polled, the other having small, light, crooked horns—a still smaller variety, bred on the mountains, and in high estimation for the table; but which is generally known under the common denomination of *Welch.*

XIV. The *Cheviot Sheep* were originally bred upon the hilly districts in the north-west part of Northumberland, but have since spread over many of the mountainous tracts in the neighboring counties, and have even nearly superseded the horned breed of black-faced sheep in some parts of the Highlands of Scotland.† They are hornless, and their faces and legs are in general white, though formerly the prevailing color was black; some, however, still retain a portion of black about the nose; and others have the face slightly tinged with yellow. The best breeds have an open countenance, with lively prominent eyes; long bodies, and fine, clean, small-boned limbs, but wanting depth in the breast, and on the chine. They are seldom slaughtered until they have attained the age of three to four and a half years, when the fat wethers will average from 16 lbs. to 22 lbs. per quarter, and in some instances still higher, fattening kindly, and producing mutton of excellent quality. Formerly the average was much lower, not exceeding 12 lbs. to 18 lbs., and they were kept longer before they were brought to market; but great improvements have been made in this stock within the last twenty years. The weight of the fleece has also been increased in some of the best flocks from 2½ to 3½, to as much as 4 lbs. to 4¼ lbs.;‡ but the wool is inferior to that of most other of the short-woolled polled breeds, and appears to have been injured by some late attempts to improve the carcass.§ It is, also, further deteriorated in the eye of the woolstapler, by the practice of smearing, or *salving*, as it is termed, of the flocks pastured on the most elevated hills, with a mixture of oil or butter with tar and turpentine, in order to protect them against the inclemency of winter: this custom, however, is now nearly disused in the lowlands, though in many places it is yet thought advantageous to the fleece.*

The sheep known as the *Herdwick Breed*, though smaller than the Cheviot, and only found in one rocky and mountainous district at the head of the Duddon and Esk rivers, in Cumberland, appear to be only a variety of the same race. The wethers and ewes are all polled: their faces and legs are speckled; but a great portion of white with a few black spots are accounted marks of the purest breed; of which also the hornless are tups; for when these are found with horns, they are considered as descended from a cross with the common black-faced heath species, and their wool is then generally intermixed with *kemps*, or hairs.

They are a hardy breed, well adapted to seek their food amongst the rocks which they inhabit; which are in many places bare, and, where covered, the soil is thin, but the herbage mostly green, though heath is found on the summits. They have no hay in winter, but support themselves in the deepest snows by scratching down to the herbage, and should any part be blown bare, they are sure to discover it. In storms they gather together, and keep stirring about, by which means they tread down the snow, keep above it, and are rarely overblown. The lambs are protected by nature, being well covered with wool when they are dropped.

The ewes are kept as long as they will breed, which is often until ten and even fifteen years of age: the wethers go off at the same age as the old Cheviots. Both ewes and wethers are sold from the mountains, and killed without being put on any better pasture, yet are sufficiently fat, and the wethers will weigh about 10 lbs. to 12 lbs. a quarter: the ewes from 6 lbs. to 8 lbs. From being fed on heath and mountain plants, the flesh acquires a peculiarly fine flavor, when these are in blossom, from July till September, and is then esteemed a great delicacy; but, when out of season, the mutton is dry and indifferent.

The mountains on which these sheep are bred are the property of Lord Muncaster, who is also proprietor of the flocks that depasture them; and having, from time immemorial, been farmed out together to herds, it is thought that, from this circumstance, the farms have obtained the name of *Herdwicks*, or the district of the herds; from which the sheep have also received their title. They are chiefly in the hands of one family, of the name of Tyson, which is said to have been settled in that sequestered spot above four hundred years.†

Another variety, termed the *Dun-faced breed*, is found in the exposed northern districts of this island. The faces of the sheep are of a dun, or tawny color: the animals are smaller in size; have short tails; and are not so hardy as the preceding sort. The wool is variously streaked with black, red, brown, or dun, and partly of a fine texture, weighing about a pound and a half per fleece,

* Agricultural Survey of Herefordshire, p. 121.

† See the evidence of the Right Hon. Lord Napier, before the Committee of the House of Lords, on the Wool Trade, 1828. Minutes, p. 15.

‡ See Farm Report for the County of Sutherland, published by the Society for the Diffusion of Useful Knowledge, in the "Farmer's Series," for 1831, No. 18.

§ See the evidence of Mr. Sutcliffe, Minutes, p. 183.

* 12 lbs. of butter mixed with 4 lbs. of tar, are used for the salving of twenty-four sheep: the expense about sixpence each.

† Agricultural Survey of Cumberland, Chap. XIII. Sect. 11.

when killed at four years and a half. Flesh finely grained, and of excellent flavor.

The *Shetland Breed*, a nearly similar race, derives its name from the islands on the north coast of Scotland, where these sheep are reared. The wool is very fine and soft, fit for the finest manufactures; the fleece weighs upon an average from one to three pounds. The Shetland sheep are very hardy, but too wild to be confined. There are two varieties of this breed; the *first* of which has very coarse wool above, and fine wool below, being supplied with long hairs termed *fors* and *scudda*, which protect the animals from the intense cold of winter; the *second* variety has soft, cottony fleeces, and is less hardy than the preceding variety, the wool being short and open: the weight of the wether carcass of either does not average more than 8 lbs. per quarter.

The *Isle of Man* possesses a breed of apparently the same parentage, but partly horned as well as polled: their general color is white, but many are gray, and a few of a peculiar brown color, provincially termed *Laughton*. In the whole breed one distinctive mark is said to appear in a Laughton-colored patch on the back of the neck; and it is somewhat singular that a similar mark has been observed on sheep from the island of Iceland, which are, indeed, said to bear a general resemblance to the Manks breed. It is observed, that sheep of the Laughton color are more tender and slower feeders than the others; but their wool is peculiarly soft, and is held in high estimation for the manufacture of stockings. The mutton of each sort is excellent; but in other respects the breed is little deserving of attention. They are of mean appearance, with high backs and narrow ribs; slow feeders, and long in coming to maturity. Many attemps have been made to improve them by crosses with Leicester, Southdown, pure Merino, and Ryeland Merino rams. These have in some degree succeeded, and in particular the cross between the Southdown and the Manks is said to be little inferior to the male parent; that with the Ryeland Merino having been judiciously made with some of the finest woolled ewes, has greatly improved the fleece; but it is admitted that these half-bred Manks Merinos are not good feeders.*

QUERIES AND DESULTORY OBSERVATIONS ON MANURING, &c.

To the Editor of the Farmers' Register.

In a late No. of the Register it is said that land originally poor can never be brought to a higher state of fertility unless calcareous manures are used—or to that effect. Now as your reasoning appears to me to be conclusive, as to the fact, it is my wish to test it by an experiment. I have about three acres of land, just cleared, of rather inferior quality. It is pretty well covered with litter, leaves, and coarse grasses, which have sprung up in consequence of the land having been partially cleared for several years. It is my purpose to put the land in tobacco the next year. As I cannot get marl, I intend to use lime, and wish you to be good enough to say in the Register, whether it must be used before grubbing and coultering, or not? whether before or after the trash is removed—and what quantity of slaked lime to the acre will be sufficient to *begin* with? and when to be repeated, &c. &c.*

Would it not be well to urge (through the Register) upon the friends of the enclosing system, the propriety of meeting in convention, through representatives from all the counties below the ridge, in order to prepare and present a joint memorial to the legislature, for amendments of the law of enclosures? The prosperity of our poor old state depends, in my judgement, more upon this measure, than upon any other, or all others—whether they consist of internal improvements by rail roads, canals, turnpikes, improvements of the channels of rivers, locks and dams, or any thing else the wisdom of the legislature may think proper to devise. The plan for enclosing our stock, instead of enclosing our crops, extends its benefits to every individual in the state, and, with peculiar certainty, to the *poor non-land-holder;* whereas, those systems which give facility to our intercourse, apply mainly to the wealthy—having a tendency to make the rich richer. Do not understand me to be an enemy to any system of internal improvement. I only mean to place the one under consideration above all others, as the benefits to arise from it are general.

In a small way I have been a very successful corn raiser; and I have ascribed my success principally, to my planting corn much *thicker* or closer together than my neighbors are in the habit of doing. My rule is, where the land has sufficient strength, under good cultivation, to produce as much as five barrels to the acre—to throw the land into ten feet beds—lay off two rows on a bed, the row next to the bed furrow to be six, and the other four feet wide. The corn is dropped three feet a part, and thinned to two stalks in a place. This gives seven and a half square feet of land to every stalk. This rule applies to the large soft corn of the south. If I plant small flinty corn on similar land, I reduce the number of square feet to six for every stalk. If the land is capable of bringing ten barrels to the acre, I would reduce the number of feet to each stalk nearly one-half: and on the other hand, if compelled to cultivate poorer land in corn, I would increase the number of square feet in similar proportions. I usually run the new ground coulter next to the corn as early as possi-

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* Agricultural Survey of the Isle of Man, Chap. XIV. Sect. 11.

*Our personal experience of the use of *quick* or *caustic* lime is very limited, and the views which we entertain, as to the manure in that state, are more theoretical than practical. They have been expressed more fully in Chap. 8, of Essay on Calcareous Manures. Newly cleared land would probably receive, without damage, a heavier dressing of quicklime than most other arable soils. Still we should fear to give more than 150 bushels of slaked lime—though three or four times that quantity, if mild, (as in marl,) might be applied to such land, safely and advantageously. In either case, the best time to apply the lime, or other calcareous manure, would be before removing the leaves and litter—which indeed should not be moved at all, if the main object is the improvement of the soil. How far leaving the litter would be opposed to the first crop proposed, tobacco, is a different question.—Ed

ble, and use the mould-board plough, or not, according to the progress of the weeds and grass in the after cultivation. My opinion is, whenever corn requires ploughing, it requires *deep* ploughing, unless it is when the corn has been planted upon a recently well turned turf—*that*, I think, should never be disturbed by after deep cultivation. Simply keep the land clean by shallow culture.

I have been in the habit of using leaves and straw, and coarse manure, for the corn crop, in the following manner, with great benefit: plough the land in nine feet beds—or rather open deep furrows nine feet apart, in the fall or winter—fill them with straw, leaves, or coarse manure—throw back the earth immediately, and when you have finished, break the land at your leisure—in beds of course—and plant the corn in rows only three feet wide, in the centre of the nine feet bed—that is, eighteen inches from the centre of the rubbish row. You will then have a six and a three feet row to each bed, giving the corn distance according to the supposed strength of the land. In cultivating the crop, the three feet row is simply to be kept clean with the hoe or skimmer, the leaves, &c. to remain undisturbed in the process of cultivation. The six feet row to be ploughed as deep as possible, but not with a mould-board plough if the land is very poor.

When you give directions to plain farmers about improving their lands, it would be well to use the simplest terms, and such as the very ignorant are accustomed to use among themselves. Say for instance, "gray land" with a "red or yellow foundation" may be improved by such and such means—omit the terms "alluvial"—"loam," &c. &c.; and in all other respects adapt your terms to the meanest capacity, if possible. The wise will understand you quite as well, and the ignorant will be delighted, and soon begin to prefer the Register to all other publications. When it is absolutely necessary to use scientific terms, define them, for there are few clod-hoppers who have dictionaries, and many that don't know "how to look for words in them."*

*We take this advice in good part, but claim that we have always endeavored to use terms as plain as possible. But while agreeing entirely in this respect with our correspondent, as to proper *ends*, we differ altogether as to the *means* by which to reach them. We think that to render agricultural terms as plain as possible, it is necessary that they should be *correct*—and that if correct terms are substituted by the provincialisms of a particular district, the terms would become plain to that district only by being made obscure to all others. We can assure our correspondent that even the meaning of "gray land" would be unintelligible to half the farming world, and that the term is not known in some counties within ninety miles of Goochland, except to those persons who have heard its use abroad. We differ as to another mean for reaching the end, *plainness*, which we both claim to approve and to seek. Certainly terms purely scientific, or technical, ought to be explained, at least often enough for every attentive reader of the work in which they are used, to learn the definitions. But if such terms as "loam," "alluvial" &c. are meant as requiring to be always defined—or even if scientific terms are to be explained every time they are used, the style of many communications would necessarily be something of the fashion of the account of "The House that Jack built," and the end and meaning would scarcely be sought by any reader among the mass of explanatory accompaniments. In short, the reader who expects every piece to serve as its own dictionary, and who will not ask or seek for explanation of a difficulty, would scarcely profit by any facilities that could be afforded. The next paragraph furnishes an example of the extent to which definitions would be required, if it is necessary to explain that when we spoke of top-dressing wheat as a "novel" practice, we neither meant to deride, nor to oppose it: but on the contrary, consider it as one of the most valuable improvements made known through the Farmers' Register.—Ed.

When you allude to *our* now universal practice of top-dressing with *well rotted manure*, you generally use the term "*this novel practice*." Some think you mean, thereby, to deride the practice. My own experience does not warrant me in saying the improvement is as permanent as the old method of turning in the manure—but I will state a fact in relation to an experiment made by a friend of mine, to which my attention has been repeatedly called. Five years ago last fall, this friend had a lot of ten acres which he was desirous of getting in clover as soon as possible. He thought he had a sufficiency of manure (well rotted farmpen) to make the whole ten acres rich. He commenced hauling, spreading, and ploughing in the manure, at the rate of *forty thirty-bushel loads* to the acre, *upon four acres of the best part of the lot*. After proceeding this far, he discovered that his manure would not hold out, at *that rate*, to complete the lot; he therefore determined to plough the land—sow the wheat, and reserve the balance of the manure for top-dressing. In the succeeding winter he proceeded to complete his work—sowed the land in clover, and top-dressed the remainder of the lot at the rate of *twelve loads* to the acre. The succeeding wheat crop on this part of the lot was equal to the other—the clover crop was better. There has been one wheat crop on the land since, which was equally good throughout—and as far as can be judged by the eye, the lot is now about equal in fertility in all its parts. This experiment has satisfied me as to the permanence of "this novel practice of manuring land."

I will call your attention to one circumstance, which in my judgement, goes, measurably, to the refutation of your idea, "that land originally poor can never be rendered more fertile, or raised above its original fertility without the use of calcareous manure." You have no doubt frequently remarked the *abiding* fertility of an acre or two of land where old settlements had been broken up and the land put in cultivation, while the adjacent lands evinced *original* poverty of soil. This is certainly the case *here*, where we have neither lime, nor marl, nor oyster-shells. Admitting the fact, what is the conclusion? Perhaps you will ascribe it to the caustic quality of the ashes that have been thrown out for fifty years. But you know that ash heaps frequently lie undisturbed for ten or fifteen years; and such is the ignorance respecting

their value, they are rarely distributed at all by small house-keepers. My conclusion on the subject is this—that those lands about the old settlements having been top-dressed for forty or fifty years, become permanently rich in consequence thereof. This is a very *novel* idea, and perhaps you will think it a very silly one: at any rate, I think it probable that top-dressing will become the universal mode of manuring land.*

Permit me to call your attention to a method of pulverizing fresh ploughed lands by the use of a drag-log, described in a late No. of the Genesee Farmer, by a friend of ours. I have used it for eighteen months, and think that one rubbing is worth a dozen harrowings for the purpose of rendering fresh ploughed land fine and mellow.†

T. W. P.

Goochland, June 10th, 1835.

From the Library of Useful Knowledge—Farmer's Series.

ORIGIN AND VALUE OF THE IMPROVED SHORT-HORNED BREED OF CATTLE.

For every portion of the text in this excellent account of the short-horns, we are indebted to the Rev. Henry Berry, than whom there are few more zealous breeders of cattle, while there is no better judge of them.

Whatsoever differences of opinion may prevail respecting the comparative merits of our several breeds of cattle, it must be admitted that the short-horns present themselves to notice under circumstances of peculiar interest. Possessing in an eminent degree a combination of qualities which have generally been considered incompatible, and rendered irresistibly attractive to the eye by their splendid frames, and varied colors, it is not surprising that they have become objects of public curiosity; that they have realized for their breeders enormous sums of money; and that throughout our own island, and in every foreign country where agriculture is attended to, they are in increasing request.

It might tend to throw much light on the science of breeding, could these animals be traced, in the progress of their improvement, to an earlier period than has hitherto been found possible. Of the extent of that improvement, we may, however, form an estimate, by placing together one of the improved, and one of the unimproved race. We should, in such case, discover resemblance just sufficient to support the belief in a very remote alliance, but there all similarity would cease.

From the earliest periods as to which we have any accounts of our breeds of cattle, the counties of Durham and York have been celebrated for their short-horns, but principally, in the first instance, on account of their reputation as extraordinary milkers.*. To recite their feats at the pail would be to invite incredulity; but it may be asserted, on the best evidence, that, taken as a breed, they have never, in this particular, been equalled. The cattle so distinguished were always, as now, very different from the improved race.

They were generally of large size, thin skinned, sleek haired, bad handlers, rather delicate in constitution, coarse in the offal, and strikingly defective in the substance of the girth in the forequarters. As milkers, they were most exeellent, but when put to fatten, as the foregoing description will indicate, were found slow feeders, producing an inferior quality of meat, not marbled or mixed as to fat and lean, and in some cases, the latter was found of a particular dark hue. Such, also, are the unimproved short-horns of the present day, and the distinction cannot be too frequently asserted, because they are, in many cases, considered as specimens of the improved breed, and have actually been resorted to in trials as to the comparative aptitude of animals to fatten—trials which is evident they could not successfully sustain.

A period of more than eighty years has now elapsed since the short-horns on the banks of the river Tees, (hence called the Teeswater breed,) had assumed a very different character to that

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*The well known fact stated above of the permanent fertility exhibited on the sites of old dwelling places on naturally poor land, instead of opposing the opinion referred to by our correspondent, is in truth, one of its strongest supports—and we have often claimed its aid in argument, for that purpose. It is not the "caustic" quality of the ashes which produces the benefit, but the calcareous earth they contain, amounting to perhaps, half their bulk—and to the phosphate of lime, which forms part of the balance. This substance constitutes the most solid part of bones. But independent of this portion of phosphate of lime, and of that in all the bones left near the residence of a family, the calcareous earth alone from the ashes, and other sources, would be amply sufficient to fix the permanent fertility always seen on such spots. The other sources of lime are almost every thing brought to and consumed at the residence of a family: for, every article of food and clothing, as well as fuel, contains some lime—all the offal of crops, &c., and therefore the proportion of lime at and near a dwelling place must be always increasing, because more is brought to it than is carried away.—Ed.

†The communication referred to has already been published in this journal, page 751, vol. II.—Ed.

* Before this, a large and valuable description of cattle had existed on the western coast of the continent of Europe, and extended from Denmark to the confines of France. They were celebrated for the great quantities of milk which they yielded, and some of them exhibited an extraordinary aptitude to fatten. At what particular time they found their way to England, or by whom they were imported, is unknown; but there is a tradition, that, towards the close of the seventeenth century, a bull and some cows were introduced into Holderness.

In external form, there appeard to be very little to recommend them, for they had large shoulders and coarse necks, the sides were flat, and the head was thick; all the coarse parts were bulky and the prime ones were reduced in size, and they were almost the reverse of what the agriculturist would select: they were, however, bulkier than the native breeds, and they were better milkers than the generality of the cattle of that day. They would, by dint of feeding, grow to an enormous size, but they had not the aptitude to fatten, nor the early maturity, to which they have been since indebted for their triumph over every other breed.—*Farmer and Gardener.*

contained in the foregoing description. In color they resemble the improved short-horns, being occasionally red, red and white, and roan, though the last named color was not then so prevalent as now. They possessed a fine mellow skin and flesh, good hair, and light offal, particularly wide carcasses, and fore-quarters of extraordinary depth and capacity. Perhaps no closer modern resemblance can be found to the above description of the Teeswater breed than Mr. Berry's bull presents. His dam was purchased by Mr. B. on account of the very few crosses that intervened between her and some of the best Teeswater cattle, to which he was desirous to go back, on account of the extent to which breeding *in and in* has been carried. When slaughtered, their proof was extraordinary, and many instances are recorded of the wonderful weight of their inside fat.

The remarkable difference which existed between the Teeswater and the old unimproved short-horns, may, with propriety, be ascribed to a spirit of improvement which had sometimes manifested itself among the breeders on the banks of the Tees, whose laudable efforts were well seconded by the very superior land in the vicinity of that river. No reasonable doubts can be entertained that they proceeded on a judicious system of crossing with other breeds, because it was utterly impossible to raise such a stock as the Teeswater from pure short-horn blood. One cross to which they referred was, in all probability, the white wild breed; and if this conjecture be well founded, it will be apparent whence the short-horns derived a color so prevalent among them.

It is also asserted that, about the period in question, Sir William St. Quintin, of Scampston, imported bulls and cows from Holland, which were crossed with the stock of the country. It would tend to little advantage to proceed with conjectures, as to what other breeds were resorted to, if any; this much is certain, that great improvement was soon manifested, and a valuable variety established, as the two following instances will prove.

Mr. Millbank, of Barmingham, one of the leading improvers, bred and slaughtered an ox, which, at five years old, weighed four quarters, one hundred and fifty stones, of fourteen pounds to the stone, producing sixteen stones of tallow; and a cow bred from his stock, slaughtered by Mr. Sharter, of Chilton, at twelve years old, weighed upwards of one hundred and ten stones.

From Mr. Millbank's time, the Teeswater cattle continued to sustain their excellence and celebrity in various hands, until Mr. Charles Colling adopted them, when he manifested a superiority of skill as a breeder, which, in a very brief period, secured him an ample fortune.

Whatever has been the merits of the Teeswater cattle, it is certain Mr. Colling greatly improved them; and though it has been asserted that his success was the result of chance, arising from the possession of an animal, with the merits of which, it is supposed, he was at one period unacquainted, the writer of this article is of opinion that Mr. Colling's success resulted from a deliberate and well considered plan. He found the Teeswater, like all other extravagantly large cattle, frequently of loose make and disproportion. He was sensible, also, of the difficulty of breeding, with any thing like certainty, *large good* animals, and though he has declined on all occasions to throw any light on his views and proceedings, the writer thinks he can detect, in the very outset, and through the progress of his practice, a resolution to reduce the size of this breed, and at the same time, and by that means, to improve its form. This he is supposed to have effected, in the first instance, through the medium of a bull called "*Hubback*," an animal respecting which there has been much controversy, principally touching the purity of his blood, a question now of little importance, because it is admitted on all hands that Mr. Colling adopted another cross, which prevails in a majority of superior short-horns of the present day. It may, notwithstanding, be a matter of interest to state a few particulars respecting this bull.

Without entering on an inquiry by what circumstances Hubback's title to be considered of pure blood is supported or weakened, it may suffice to observe, that it appears probable he possessed on one side the imported blood. The possessor of his dam was a person in indigent circumstances, and grazed his cow in the highways. When afterwards she was removed to good land, near Darlington, she became so fat that she did not again breed; and her son, having the same feeding propensity in a high degree, was useful as a bull during a very short period. The quality of his flesh, hide, and hair, are supposed to have been seldom equalled; and as he was smaller than the Teeswater cattle, he was eminently calculated to forward Mr. Colling's views.

It has been remarked that we have at present no superior horse on the turf, which does not boast the blood of the Godolphin Arabian; so it may be asserted that we have no superior short-horns which do not claim descent nearly, or remotely, from Hubback.*

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* This is true, because Hubback was the sire of the dam of Mr. Charles Colling's bull, Foljambe, who was the grandsire of Favorite; and there can be no doubt that there has not been for many years any superior short-horn who was not descended from Favorite. Mr. Charles Colling is said to have considered that the bull Foljambe, was the one that did his stock the greatest good; and this is not improbable, as Foljambe was the sire both of the sire and dam of Favorite. Hubback, however, must have been a remarkable good animal; and considering the short time during which he was used as a bull, proved himself a first rate stock getter. The following account of Hubback we had from Mr. Waistell, of Allhill, who, although his name does not appear conspicuously in the "Short Horned Herd Book," deserves much credit for his discrimination here. He used to admire this calf as he rode almost daily by the meadow in which it grazed; and at length he attempted to purchase it from the owner. The price asked, £8, seemed much for a calf not a year old and the reputation of the short-horns not being yet established, the bargain was not struck. Still he longed for the young beast; and happening to meet Mr. Robert Colling near the place, he asked his opinion of the animal. Mr. Colling acknowledged that there were some good points about him; but there was something in his manner of acknowledging this, which induced Mr. Waistell to suspect that Mr. Colling thought somewhat more highly of the calf than his language expressed, and therefore, he hastened the next morning, concluded the bargain, and paid the money. He had scarcely done so before Mr. Robert Colling arrived for the same purpose, and as the two farmers

After the use of this bull, Mr. Charles Colling proceeded with singular success to produce, from time to time, superior animals; and the number of bulls he disposed of by letting was highly encouraging. But the circumstance which brought the improved short-horns into most extensive notice, was, the production of the "Durham ox," an animal which speaks volumes in favor of even a single cross of this blood; for the ox was the produce of a common cow, which had been put to "*Favorite.*" At five years old, the Durham ox was sold to Mr. Bulmer, of Harmby, near Bedale, for public exhibition, at the price of £140: this was in February, 1801. He was at that time computed to weigh 168 stones, of 14 lbs., his live weight being 216 stones; and this extraordinary weight did not arise from his superior size, but from the excessive ripeness of his points. Mr. Bulmer having obtained a carriage for his conveyance, travelled with him five weeks, and then sold him and the carriage, at Rotherham, to Mr. John Day, on the 14th of May, 1801, for £250.

On the 14th of May, Mr. Day could have sold him for - -	£525
On the 13th of June for -	1000
On the 18th of June for -	2000

Mr. Day travelled with him nearly six years, through the principal parts of England and Scotland, till at Oxford, on the 19th February, 1807, the ox dislocated his hip bone, and continued in that state till the 15th April, when he was obliged to be slaughtered, and, notwithstanding he must have lost considerably in weight during these eight weeks of illness, his carcass weighed,

	Imp. stones,	lbs.
Four quarters, - -	165	12
Tallow, - - -	11	2
Hide, - - -	10	2

This was his weight at eleven years old, under all the disadvantages of travelling in a jolting carriage, and eight weeks of painful illness. Had he been kept quietly at Ketton, and fed till seven years old, there is little doubt but he would have weighed more than he did at ten years old, at which age Mr. Day stated his live weight to have been nearly thirty-four hundred weight, or two hundred and seventy stones, from which if fifty be taken for offal; it leaves the weight of the carcass two hundred and twenty stones.

It is a well ascertained fact, that, during his career as a breeder, Mr. Colling tried several experiments in crossing, and the breeds to which he resorted on these oocasions, being very considerably smaller than the short-horns, this circumstance tends to corroborate the writer's opinions that he considered it desirable to reduce their size. The cross with the Kyloe led to no results worthy enumeration, but that with the *Polled Galloway* must not be passed over without comment. Before stating the circumstances attending this experiment, it may be proper to observe that no breed of cattle promised so successful a cross with the short-horns as the Galloway. They were calculated, by their deep massive frames and short legs to bring the short-horns nearer the ground, and to dispose their weight in a more compact manner: their hardy habits would be essentially useful, and the quality of their flesh and hair were such as to render the experiment still more safe. Add to this, that they could be obtained of a red color, and we are prepared to admit, even without the sanction of a successful experiment, that they were admirably adapted to cross with the short-horns, standing frequently too high from the ground, not very well ribbed home, and not seldom of loose, disjointed frame.

To this breed Mr. Colling resolved to resort; and though at the time when he did so, the event was regarded with some degree of ridicule by the pure blood advocates, and comments passed which would have deterred ordinary men from the exercise of their judgement, Mr. Colling persisted.

He was much favored by circumstances in promoting his object which was to take one cross, and then breed back to the short-horn—the only course, by the way, in which crossing can be successfully adopted. To breed from the produce of a cross *directly among themselves* will lead to the results which have induced many persons, without due consideration to believe conclusive against crossing; but to take one cross, and then return and adhere to one breed, will in the course of a few generations, be found to stamp a variety with sufficient certainty.

Mr. Colling's short-horned bull *Bolingbroke* was put to a beautiful red polled Galloway cow, and the produce, being a bull calf, was in due time, put to *Johanna*, a pure short-horn—she also producing a bull calf. This grandson of Bolingbroke was the sire of the cow *Lady* by another pure short-horned dam and from Lady has sprung the highly valuable family of improved short-horns, termed, in reproach, the *alloy*. How far the alloy was derogatory, let *facts* testify.*

It will probably be admitted that the prejudice against this cross was at the highest at the time of Mr. Charles Colling's sale. The blood had been little, if at all, introduced to other stocks, and it was manifestly the interest, whatever might be the inclination, of the many breeders who had it not, to assume high ground for the pure blood, and to depreciate the alloy. Under these untoward circumstances for the alloy, what said public opinion, unequivocally certified by the stroke of the auction-

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rode home together, they agreed that it should be a joint speculation.

Some months passed by, and either Mr. Waistell's admiration of the calf a little cooled, or his partner did not express himself very warmly about the excellence of the animal, and Messrs. Waistell and R. Colling transferred young Hubback to Mr. Charles Colling; who, with the quick eye of an experienced breeder, saw the value of the little beast. Mr. Waistell expressed to us (October, 1823,) his regret [natural enough] at having been induced to part with the sire of the short-horns, and his extreme disappointment that when Hubback began to cover, Mr. Charles Colling confined him to his own stock, and would not let him serve even one of Mr. Waistell's cows.—*Farmer and Gardener.*

*The dam of Lady was also the dam of the bull Favorite; and as the grandson of Bolingbroke is not known to have been the sire of any other remarkable good animal, it is most probable that the unquestionable merit of Lady and her descendants is to be attributed more to her dam than to her sire.—*Farmer and Gardener.*

eer's hammer? *Lady*, before mentioned, at fourteen years old, sold for two hundred and six guineas. *Countess*, her daughter, nine years old, for four hundred guineas. *Laura*, another daughter, four years old, for two hundred and ten guineas. *Major* and *George*, two of her sons, the former three years old, the latter a calf, for two hundred guineas, and one hundred and thirty; besides a number of others, more remotely descended from Lady, which all sold at high prices; in fact, in a sale of forty-eight lots, realizing £7115 17s. Lady and her descendants sold for a larger sum than any other family obtained.

The whole particulars of the first grand sale of short-horned stock ought to be preserved. We extract it from Mr. Bailey's Survey of Durham.

A CATALOGUE

Of Mr. Charles Colling's Sale of Imported Short-Horned Cattle, October 11, 1810.

COWS.

Names.	*Out of.*	*Got by.*	*Cow's Age.*	*Bulled by.*	*Sold for Gu.*
Cherry,	Old Cherry,	Favorite,	11	Comet,	83
Kate,		Comet,	4	Mayduke,	35
Peeress,	Cherry,	Favorite,	5	Comet,	170
Countess,	Lady,	Cupid,	9	do.	400
Celina,	Countess.	Favorite,	5	Petrarch	200
Johanna,	Johanna,	do.	4	do.	130
Lady,	Old Phœnix,	A grandson of Lord Bolingbroke,	14	Comet,	206
Catheline,	A daughter of the dam of Phœnix,	Washington,	8	Comet,	150
Laura,	Lady,	Favorite,	4	do.	210
Lilly,	Daisy,	Comet,	3	Mayduke,	410
Daisy,	Old Daisy,	A grandson of Favorite,	6	Comet,	140
Cora,	Countess	Favorite,	4	Petrarch,	70
Beauty,	Miss Washington,	Marsh,	4	Comet,	120
Red Rose,	Eliza,	Comet,	4	Mayduke,	45
Flora,		do.	3	do.	75
Miss Peggy,		A son of Favorite,	3	Comet,	60
Magdelene,	A heifer by Washington,	Comet,	3	Comet,	170

BULLS.

Names.	*Out of.*	*Got by.*	*Age.*	*Gu.*
Comet	Phœnix	Favorite	6	1000
Yarborough		Favorite	9	55
Major	Lady	Comet	3	200
Mayduke	Cherry	do.	3	145
Petrarch	Old Venus	do.	2	365
Northumberland		Favorite	2	80
Alfred	Venus	Comet	1	110
Duke	Dutchess	do.	1	105
Alexander	Cora	do.	1	63
Ossian	Magdelene	Favorite	1	76
Harold	Red Rose	Windsor	1	50

BULL CALVES—UNDER ONE YEAR OLD.

Names.	*Out of.*	*Got by.*	*Gu.*
Kenton	Cherry	Comet	50
Young Favorite	Countess	do.	140
Geerse	Lady	do.	130
Sir Dimple	Daisy	do.	90
Narcissus	Flora	do.	15
Albion	Beauty	do.	60
Cecil	Peeress	do.	170

HEIFERS.

Names.	*Out of.*	*Got by.*	*Age.*	*Gu.*
Phoebe	Dam by Favorite	Comet	3	105
Yough Dutchess	do.	do.	2	183
Young Laura	Laura	do.	2	101
Young Countess	Countess	do.	2	206
Lucy	Dam by Washington	do.	2	132
Charlotte	Catheline	do.	1	136
Johanna	Johanna	do.	1	35

HEIFER CALVES UNDER ONE YEAR OLD.

Names.	*Out of.*	*Got by.*	*Gu.*
Lucilla	Laura	Comet	106
Calista	Cora	do.	50
White Rose	Lily	Yarborough	75
Ruby	Red Rose	do.	50
Cowslip		Comet	25

From Evans' Italy.

PARMESAN CHEESE—IRRIGATED LANDS.

The country between Cremona and Lodi comprises the richest part of Milanese. The irrigation too is brought to the highest state of perfection. The grass is cut four times a year as fodder for the cows, from whose milk is made the well known cheese called Parmesan. The cows, which are kept in the stall nearly all the year round, are fed during summer on two of these crops of grass or clover, which are cut green, and in the winter on the other two, which are hayed. The milk of at least fifty cows is required for the manufacture of a parmesan cheese. Hence, as one farm rarely affords pasture for such a number, it is usual for the farmers or metayers of a district to club together. The milk of 50, 60, or even 100 cows, is brought twice to the farm where the dairy is fixed; the person on whom devolves the task of making the cheese, keeps an account of the milk received, and the cheese is afterwads apportioned accordingly. In this fertile plain a farm of sixty acres is considered as a large one. These farms are subdivided into fields of three or four acres, for the convenience of irrigation; a practice which, in the course of a few years, impairs the quality of the grass to such a degree, that it becomes necessary to discontinue it. In this case, the sluices of the Gora are shut, the ground is ploughed in autumn, and in the following spring sown with hemp, which shoots up to a great height; when this is pulled, the ground is sown with leguminous plants. In the next spring it is sown with oats, which grow to the height of six or seven feet. The richness of the soil being thus sufficiently subdued, it is next cropped with wheat. Maize is then sown in the following spring; a second crop of wheat succeeds, and finishes the course of cropping. The ground is then left to itself, and is immediately covered with herbage. During winter it is manured, and the new meadow is then subjected again to the process of irrigation, which is usually continued for fifteen years. Thus the rotation in the Milanese extends to twenty years; five years for the growth of hemp, pulse, and grain, and fifteen for the growth of grass. Rice is also grown in some parts of the Milanese; but as it partakes of the nature of an aquatic plant, for the rice grounds are kept under water during nearly the whole period of its growth, its cultivation has been placed under considerable restriction by the government, owing to the malaria which it engenders.

From the Silk Culturist.

VIRGINIA SILK.

Mr. Forrest Shepherd, of New Haven has presented us with a specimen of the Bombyx Virginiensis, or the native silk worm of Virginia. It is found in great numbers on the Plantation of J. B. Gray, Esq. Stafford Co., and is capable of enduring the most rigorous winter. The cocoons are found suspended upon the red cedar, and yield a beautiful white silk of a strong thread.

The future history of this insect will be particularly interesting to all engaged in the culture and manufacture of silk. Mr. Shepherd, who is soon to visit Virginia, has kindly promised to give us farther information on the subject.

From the Silk Culturist.

THE VALUE OF A FEW MULBERRY TREES.

A few years since, a farmer purchased a farm in the town of Mansfield, on which were standing twelve mulberry trees of full growth. Not being accustomed to the business of making silk, he supposed them to be of no more than the ordinary value of forest trees for fuel. A neighbor, however, soon called upon him, and agreed to pay him twelve dollars annually, for the privilege of picking the leaves. The farmer, to his astonishment, found that the twelve mulberry trees were as good to him as $200, at six per cent. interest.

FORMS FOR AN OVERSEER'S JOURNAL AND MONTHLY REPORTS, SUITED TO A SOUTHERN PLANTATION.

[The gentleman who sends the following forms, has long been engaged in planting on a very large scale, and therefore his experience is worth far more than any opinion we could offer of the usefulness of the plan. It should be observed that in the copy below, the mere plan is presented: the blank spaces, which would be required on a sheet for use, are here necessarily reduced in size, or omitted. In blank forms printed on a large sheet, to receive the actual entries, the "Journal of plantation ——, for the month ——," should occupy two entire pages facing each other—and the other two pages would give room for the several other accounts. If the blank space left at the end for "General Remarks," should not be sufficient, it could be easily enlarged by adding a blank leaf to that particular monthly report, without affecting the regular order and form of the reports.]

To the Editor of the Farmers' Register.

I send you a copy of a plantation journal which I have had made and printed after my own experience, with the request that you will subject it to the examination of practical planters, and if approved, present it the "agricultural society" of your district, with my highest respects.

The intercourse of experience, founded on practical knowledge is the only solder of an agricultural community: and every individual is bound not only by his duties to others, but by his own interests, to extend and nourish this useful interchange of systems. It is from this principle that, humble as the gift may be, I tender to you the first offspring of my own exertions—and I can only hope that like the "widow's mite," the acceptance may be secured by the purity of my motive.

You will observe that the journal is adapted for a period of one month, and is intended to be bound in boards of twelve sheets for a volume—thus forming an authentic record annually, of the operations on the estate, and serving thereafter as a reference for seasons, crops, expenses, &c. I conceive that the simple and concise form of this sheet, will enable any overseer to keep it correctly, as he will have nothing to do save to fill up the heads and columns—and when proprietors travel for the summer, or reside off their plantations, this sheet neatly folded, will as a letter, inform them of all the operations of the farm, and even its daily proceedings.

F. MACRAE.

Tallahassee, Florida.

JOURNAL OF PLANTATION

Days of he week.	Days of the Month.	State of the weather.	NEGROES. IN THE FIELD. Men.	Women.	Boys.	Girls.	Jobbing.	Ginning.	Tradesmen	House servants.	Sick.	Invalids.	Nurses.	Stock Minders.	Absent.	Infants.	Increase.	Decrease.	Total.

JOURNAL OF PLANTATION.

NEGRO ACCOUNT.

	Men.	Women.	Boys.	Girls.	Total.
On hand, - - -					
Increase, - - -					
Total, - - -					
Decrease, - - -					
Remain, - - -					

CATTLE ACCOUNT.

	Horses.	Mules.	Oxen.	Cows.	Calves.	Sheep.	Pigs.	Goats.	Total.
On hand, - -									
Increase, - -									
Total, - -									
Decrease, - -									
Remain, - -									

LAND AND CULTIVATION.

Acres land cleared, - - -		Acres in cotton, - - -	
Acres land in wood, - - -		Acres in corn, - - -	
Acres in pasturage, - - -		Acres in rice, - - -	
Acres land barren, - - -		Acres in grain, - - -	
		Acres in potatoes, - - -	
Total land, - - -		Acres in ———, - - -	
		Orchards and gardens, - - -	
PLANTED THIS MONTH.			
Acres of corn, - - -		Total cultivation, - - -	
Acres of cotton, - - -		Acres vacant, - - -	
Acres of rice, - - -			
Acres of potatoes, - - -		Total cleared land, - - -	

CROP HARVESTED.

Bushels of corn, - - -		Pounds raw cotton, - - - -	
Bushels of peas, - - -		Pounds clean cotton, - - - -	
Bushels of oats, - - -		Bushels raw rice, - - - -	
Bushels rye or wheat, - - -		Pounds of pork, - - - -	
Pounds of fodder, - - -		Pumpkins, - - - -	
Pounds of hay, - - -		Bushels potatoes, - - - -	
Bushels turnips, - - -			

FOR THE MONTH OF 183

Pounds of cotton picked per diem.	EMPLOYMENT AND REMARKS.

CONSUMPTION AND EXPENDITURE.

CONSUMED THIS MONTH.

Feeding Negroes, viz:

Corn, (No. bushels)	-
Potatoes, Do.	-
Rice, Do.	-
Salt, Do.	-
Bacon, (No. pounds,)	-
Pork, Do.	-
Fresh beef, Do.	-
Salt fish, Do.	-
Tobacco, Do.	-
Molasses, (galls.)	-

FEEDING MULES, &c. viz:

Corn, (bushels,)	-
Oats, Do.	-
Rye, Do.	-
Turnips, Do.	-
Peas, Do.	-
Fodder, Do.	-
Salt, Do.	-

RECEIVED THIS MONTH.

From

GENERAL REMARKS, &c.

ON THE SPAYING OF COWS, AND ITS EFFECT UPON THE SECRETION OF MILK.

A private letter from a farmer in Goochland contains the following inquiry and remarks:

To the Editor of the Farmers' Register.

"I wish to make an inquiry of your correspondents, through the Register. It is, whether any one can say with certainty, how long a cow, *spayed* when she is in full perfection, and giving the greatest quantity of milk, will continue to give milk in full quantity, if properly attended to?

"Next to the stock enclosing system, (which the repeal of the present law of enclosures would cause,) the above fact, if it be (as I have been told,) a fact, that cows will continue to give milk plentifully as long as they live, would be of the greatest importance to the poor people. They would not then have to wait, every year, for a half starved cow to have a calf, before their children could get a supply of milk to keep them from suffering for suitable food. They would have a supply for years, and that from an animal easily kept, as spayed animals always are. Small as this thing may seem to be to those who abound in the good things of this life, it is an important matter to be established as regards the poor—and middle classes too."

While joining with our correspondent in the request that others will state whatever facts they may know on this subject, we will offer such information as we are possessed of, and which, though not derived from personal experience, appears to be as well authenticated.

The only publication which we have ever met with on the spaying of milch cows, is contained in a late French periodical—though it is there stated that the advantage of this operation was first discovered by a Mr. Winn of our own country: and no other facts than his had been previously made known, nor are any given by the French writer, except the few repetitions of the experiments in Switzerland, the report of which we will present below. It is singular that so little should be known of the operation in the country in which it originated. It is not stated from what American publication the knowledge of Mr. Winn's practice was learned, and we have to confess our entire ignorance as to the source of information, as well as of the person mentioned.

Before proceeding to give the translation of the French article, we will state a fact within our knowledge, that the spaying of milch cows was practiced on the farm of a deceased friend, John Edmunds of Sussex; and that when we saw the cows and were informed by him of the facts, he was perfectly satisfied with his success, and entertained no doubt of the cows continuing to yield milk without diminution, so long as they were properly kept, and properly milked. The only doubt seems to be whether the secretion of milk will continue through the healthy life of the animal, or only for a time unusually long compared to that of breeding cows—say for several years. We were then struck with the obvious advantages of having a few permanent milkers, which with care and attention would yield regularly as much milk as thrice their number in the ordinary way—and at the same time getting rid of all the trouble of the continual changes of cows, and fluctuations (natural and artificial) of their yield of milk. The want of any person capable of performing the operation with facility and safety prevented our making the experiment. By the way—it appears below that the art of castrating domestic animals is thought in Europe not beneath the attention of government—and that able veterinary surgeons are employed to give courses of instruction to the common operators. So long as such operations are performed here by ignorant negroes, or others but little better informed, there would be greatly increased hazard of death, or of injury to cows in spaying. But there can be no doubt that if proper knowledge and skill are used, that the operation is easily performed, and perfectly safe. It is scarcely necessary to observe that spaying will not serve its intended purpose, if the cows afterwards are as badly treated and milked after the usual manner of lower Virginia—that is, to take from the cow a little less milk every week, if not every day, until she "goes dry." Our milk maids consider this to be the regular order of things; and it would be very difficult to convince them of the possibility of "flying in the face of nature," and of their established usage, by spaying cows.

Without any view of milking qualities, this operation has been used by some of the old "good livers" of lower Virginia, on heifers, for the purpose of making superior beef.

We proceed to give the article entire.

Translated for the Farmers' Register, from the *Recueil de medecine veterinaire pratique.* February 1834.

Mr. Winn, a proprietor in North America, has been the first to report that he has spayed cows, and preserved during many years the quantity of milk which they gave at the time of the operation. The action of the udder neither being injured by the function of gestation, nor by the animal being in heat, it may be conceived that the secretion of milk may continue. Many proprietors, especially those who are situated near great cities, where the high price of milk makes it unprofitable to raise calves, would derive great advantage from keeping cows whose milk would not dry up.

But the observations of Mr. Winn were not numerous, and besides, he has not indicated what method of spaying he used for his animals. We need new observations and more precise details. M. Levrat, a distinguished veterinary surgeon of Lausanne, from whom many communications have been inserted in the *Récueil de médecine vétérinaire*, reports his manner of performing this operation on the cow, and the physiological results which he has remarked after two cases. The number of facts still needs to be increased: they ought also to be observed longer, before a decided opinion is formed of the dangers and consequences of the operation. However, the notice which M. Levrat has inserted in the *Journal des Connoissances utiles* will doubtless be interesting to our readers. We give in the author's words:

"In May 1832 I was entrusted by the government of the Canton de Vaud, with the direction of a course of instructions for the country operators in the art of castration. The opportunity to repeat the experiments made in America on spaying cows, was too favorable to be missed. I performed the operation of extracting the ovaries of a

cow, which was intended to be sacrificed to illustrate the course of instruction. This cow not giving milk, my object could not be completely attained. Nevertheless, it was no small gain to have studied the manual part of this operation, and to have assured myself of its pathological effect, in order to be able, on the one hand, to practice this operation with assurance, and on the other, to inspire with more confidence the owners of cows who might be willing to make the trial. My attempt was quite successful. The cow operated on did not seem to be made sick by it: during the two days which followed the operation she appeared rather drooping [*un peu triste;*] but by the third day she was as lively as before, and returned to her usual habits.

"The object then was to perform the operation on cows that were in the condition indicated by Mr. Winn, that is to say, a month after their second or third calving.

"M. Francillon Michaud, to whom I gave information of this discovery, was desirous of submitting one of his cows to the experiment. This cow, six years old, then had her third calf. The preceding years, she had given, soon after her calving, eight quarts [*pots*]* of milk, and six quarts at a later period. This cow was operated on, June 23d, 1833, thirty-eight days after calving. The consequent sickness was but slight: only it was observed that during the two days which followed the operation she had less appetite: her milk was lessened four quarts—but the third day she recovered her appetite, her liveliness, and returned to her previous quantity of milk. During the whole summer she continued to give about nine quarts; and since the supply of green food has ceased, and she has been kept on dry forage, she has kept at seven quarts—while the preceding years, as before stated, she gave [under like circumstances] but six quarts.

"Encouraged by this first success, M. Francillon requested me to make a second trial. For this, he chose an old cow, that yielded milk abundantly, in order to form a judgement of this operation upon aged cows. This one was twelve years old, and had produced twin calves on the 17th of October, and had sustained injury in giving them birth. She had yielded, in preceding years, on an average, eight quarts of milk. She was spayed on Nov. 18th, thirty-three days after calving. She gave at that time twelve quarts of milk. After the operation she lost three quarts: but it is proper to state that this cow has a discharge of matter from the womb, and that she neither eats nor digests as usual, and that it will be otherwise when she is in good health.†

"The authors of the article upon the spaying of the cow have not directed the manual part of the operation; yet it is so much the more important to know, as the ovaries vary in their position, according to the species. I do not know that any author has given the necessary directions. Daubenton has spoken of the manner of spaying ewes, and after him, Fromage of Feugré: but the practice on the ewe is not applicable to the cow: it is therefore that I am going to describe the mode of operation which I have tried, and found successful.

"The operation should be performed at from 30 to 38 days after the calving, upon a cow that has had her second or third calf, because that is the period at which a cow yields the most milk, and after which it may be enjoyed for a long time. There is no precaution necessary, save that of not permitting the cow to have a full meal the preceding evening, and to operate in the morning before she eats again. The things required for the most convenient mode of practice, are, some cords, a plank or bar of wood, two surgical knives [bistouris,] the one convex on the edge; the other straight, and with a guard on the point [boutonné] —two needles bent for stitching, with stout twisted thread, well waxed, two pegs of dry wood, eight inches long and of the diameter of about a quarter or third of an inch.

"*Manner of fixing the cow.*—To be enabled to operate in perfect security, it is necessary to fix the animal suitably. To this end she is placed against a wall, the left side turned towards the operator. This wall ought to have three buckles fixed to strong rings. One of these rings is for the cord that confines the head; the other two should be placed lower, one at the level of the lower part of the right shoulder; the other at the point of the knee bone—or an assistant may hold the cord to produce the intended confinement. The head is fixed by the cord being tied; or otherwise held by a strong assistant. Then the plank or bar is placed obliquely under the udder, forward of the posterior members—and is held by an assistant to protect the operator from the feet of the cow. The tail is also held, or it may be tied to the rope which passes round the animal, to prevent the blows from it which might be received (if unconfined) when the operator introduces his arm into the abdomen.

"For want of a wall, provided with rings and buckles, use may be made of a strong paling, a solid gate or fence, or even of trees standing at suitable distance, to which is fixed a large wooden bar.

"The animal being securely fixed, the operator armed with the knife with the convex edge, which he holds in his right hand, places himself near the left shoulder of the cow, the left hand applied to her back: this hand gives a point of support to lean on, if made necessary by the unruly movements of the animal; and this support gives more steadiness to the right hand. He carries the edge of the knife to the middle (and a little nearer the upper part) of the left flank, and with a single stroke, he cuts vertically through the skin and the muscles of this part.

"The flank having thus been opened to the *peritonæum*, [the membrane which envelopes the bowels,] the operator enlarges the incision with the guarded knife, so as to be able to pass his arm. He introduces his hand into the abdomen, directing it against the cavity, behind the bottom [*culde-sac*] of the paunch, where are found the horns of the uterus. As soon as he meets with this

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*This measure *(pot)* is equal to two French pints—but still may be different from two American pints, as rendered above. No mistake in this respect, however, will affect the comparison of quantities yielded before and after the operations.—Ed. F. R.

†It may be supposed that the time of year, and consequent diminution of green and juicy food, also had some effect in keeping down the quantity of milk in this case.—Ed. F. R.

organ, where the ovaries are situated, between the thin bands [or membranes] of the ligaments suspending the uterus, he seizes one of the ovaries, which he detaches from its posterior part with the thumb and fore-finger; he passes this over the convexity of the ovary, to separate it completely from the peritonæal ligament, which sustains it: then he seizes the ovary in his hand, draws it gently, and by means of the thumb nail, he scrapes the vessels and the fallopian tube upon the fore finger, which presents a point of support under these vessels. Finally, he breaks the cord, which is the object in view, by gently drawing it, as he makes it undergo the scraping with the nail, and the ovary is brought out. He then again introduces the hand into the abdomen, and proceeds in like manner [to extract the other ovary. Then the wound is closed by stitches secured with the wooden pegs, taking care not to close entirely the lower part, in order not to hinder the discharge of the matter, which, without this precaution, would spread between the skin and the muscles, and within the abdomen, and might cause ill effects which are avoided by favoring its passage out.

"The ovaries may also be drawn out of the opening made in the flank, and then detached with the ends of the fingers: but this mode may be attended with inconveniencies. Besides, it is not more expeditious than the course I have directed, because it often happens that the ovary escapes from the hand, and that the operator has again to introduce his arm to search for it.

"Two or three days after the operation, the wound must be dressed. For the dressing it is only necessary to foment twice a day all around the wound with lukewarm mallows—to keep it clean, and in warm weather to inject in the wound the water of Labarraque. Every time of dressing the wound; the aperture should be covered with a little tow placed between the two pegs, to prevent any dirt getting in, and which is secured with thread in its place. The wound being properly dressed twice a day, will cure of itself in fifteen days, or at most three weeks.

"It is seen from what has been stated above, that the effect of spaying is not merely as has been said, to keep the milk producing faculties at the height at which they were before the operation, but rather at a height *above the previous degree of those faculties;* which, without contradiction, is an important advantage, and especially if it is true that this faculty is preserved during many years.

The wounds of the cows of M. Francillon on which I operated, were dressed by his servant—and thus it ought to be managed, to avoid the expense of having the dressings attended to by a veterinary surgeon. For if this practice should spread, it is necessary to make it cheap, that it may occasion as little expense, and render as great advantages to proprietors as possible, and such as I hope they will derive."

From the Fruit Cultivator.

SOILS SUITABLE FOR APPLE TREES. MR. KNIGHT'S OPINION OF GRAFTED TREES ERRONEOUS.

Deep rich soils, in sheltered situations, are not the most proper for the apple, though such have been most erroneously recommended by writers who ought to have known better. For it is often seen that apple trees succeed well in any kind of loam, though it be not more than one foot in depth, so as the bottom is sound and dry: the roots take an extensive horizontal range, the young wood is always of more moderate growth, and better ripened than where roots strike deep into the ground.

The golden pippin being one of our most useful and esteemed hardy fruits, the author trusts he will be forgiven for entering more at large into its history and management than he has thought necessary in the preceding notices of other inferior kinds of apples, especially as there has been, for several years past, an idea prevalent, that this country was about to lose this fine fruit forever. In Mr. Knight's *Treatise on Orchard Fruit*, the doctrine was first broached, that all our varieties and sub-varieties of fruits have but a temporary existence. They are raised from seed, to flourish for an uncertain number of years, and, after arriving at their maximum of health and fertility, gradually sink to decay, and at length disappear. Taking this idea as a rule, the golden pippin was judged to be in this last stage of existence; and it was predicted, that not only were the old full grown trees to disappear, but all the young ones, lately worked from them, would perish also. It must be admitted, that a great majority of the old golden pippin trees in Herefordshire, and in other parts of the kingdom, were, about the time Mr. Knight wrote his treatise, in an apparent state of decay; and, moreover, that young trees of the same sort could but with difficulty be made to grow and bear so freely as they had previously done. These failures, however, were accounted for in another way than that propounded by Mr. Knight. It was observed, that the old trees, having probably all been planted about the same time, and having arrived at their natural period of healthy existence, were like all other trees, falling to decay from sheer old age; and that the contemporaneous weakness and debility of the young lately planted trees were caused by a careless choice of grafts, by working them on improper stocks, and planting them in old worn out soil, instead of in fresh, well trenched, light, loamy situations. This latter opinion was the more feasible, because there were many middle aged trees in different parts of the kingdom, which were in full vigor and bearing; and though young plants planted in old gardens and orchards were unthrifty such as were properly planted in newly broken up ground, provided they were worked on the best crab stocks, succeeded as well as ever.

This being the opinion of the author respecting the failure of the old golden pippin, and all other sorts of apples, he gave the subject his best consideration, and set about proving how far his own conjectures were well or ill founded; and, after the experience of forty years, he has come to the following conclusion; viz., that if crab stocks be raised from the most healthy wild trees, properly treated, and planted out in the nursery, and worked with the most healthy moderate sized scions, cut from the top of sound healthy trees, and, when fit for final transplantation, be placed on well trenched light fresh loam, having a dry bottom of rock or chalk, the trees will assuredly prosper without fear of disappointment. On the other

hand, if the graft be taken indiscriminately from any tree, or from any part of a tree, and placed either on free or paradise stocks, the young trees so raised will, nine times out of twelve, be in some respect or other defective; and particularly if they be not afterwards planted in their favorite soil, where their wood would not be sufficiently ripened.

The golden pippin requires a dry and moderately warm climate. The best fruit are produced in Normandy on the continent, in Sussex in England, and on walls in Scotland. The south of France is too warm, and the richer counties of England and Ireland are too moist. This apple is supposed to have been first raised at Parham Park, on the Southdowns of Sussex.

It has been noticed of late years, that neither the golden pippin nor Nonpareil keep so well as formerly. The author well remembers, that, sixty years ago, both these kinds of apples were plentiful in May; but it is not so at present. This is attributed to two causes; our summers lately being more moist, and perhaps too many free and paradise stocks used in their nurseries. It has been deemed a good practice to raise the golden pippin from cuttings or layers. This plan is quite practicable; and some practitioners have been very successful in raising plants from cuttings, intended for potting. Trees may also be raised by layers from stools kept on purpose in the nursery.

THE MEANS OF RECOVERING AND PRESERVING YARDS FROM FOUL WEEDS.

To the Editor of the Farmers' Register.

Ben Lomond, June 6th, 1835.

Though the subject of the following communication may be considered by yourself as unworthy of a place in your periodical, yet I feel that it contains information interesting to at least a small portion of your readers. In this communication, I shall make no pretensions to *originality* or *discovery*, as my information was derived from an intelligent lady near me. She informed me that her yard was at one time infested with (I use her own words) all kinds of foul weeds, the common old field broom straw, &c. &c. While on a visit to her this spring, I was struck with the peculiar beauty of her yard, and its purity from all "foul weeds." I inquired the cause, as it was a subject of interest to me, having seen many beautiful sites for yards, destroyed by allowing the foul weeds to take possession of them.

Her *modus operandi* is simple, but which I fear will be no recommendation. At any time in the spring, (before a rain is preferable) if ashes are scattered over the yard, in a short time all the foul weeds will be rooted out, and in their place will come a beautiful bed of the greensward grass. The ashes should be scattered frequently, always before a rain, (I suppose during the year.)

Query.—Would not the sulphate of lime (plaster of Paris) accomplish the same object? Whether the ashes act as a manure, thereby facilitating the growth of the grass, or whether they destroy the weeds, I am unable to say, though I think the former supposition the most probable. This communication is induced from the reflection, that there can be no ornament more superlatively beautiful, than a handsome yard about a handsome building—and trusting that these ideas will serve a useful purpose, I am willing to submit them to your discretion, though not clothed in such a garb as I could wish for your truly useful paper.

As I highly approve of a piece which I met with in your paper, suggesting the idea that all communicators should affix their true name, I subscribe myself,

T. B. WATKINS,
Of Goochland.

[The facts stated above are not only interesting as furnishing matter for useful and often needed practice, but because they also serve to illustrate the views already expressed in other articles in the early part of this No. (pp. 129 and 130.) The principal, if not the sole agent of the change produced by the application of ashes, was the calcareous earth which they contained—of which earth, the benefit to greensward is as remarkable as to clover. Broom grass is not, usually, at once destroyed by the use of this manure, (as sheep sorrel is,) but the growth is evidently injured by calcareous manures, so as to induce the belief, that the destruction will be complete in time. We have only in one case observed the almost complete destruction of the growth of broom grass, which was previously the unmixed cover of a worn-out old field. This was also produced by top dressing—but with marl, instead of ashes. The piece of ground (about an acre) was neither ploughed nor grazed for several years after; and by the third summer, the broom grass had generally disappeared, and was substituted by other weeds, except in some small spots which it was supposed the manure did not reach. After ploughing in marl, and even after several years of tillage, broom grass will return, and even grow luxuriantly—but it is in separate and scattered bunches, instead of forming a regular and unmixed cover to the land, as before marling.

We are the more pleased to be indebted to a *lady* for this experiment—and hope that it may be noticed and repeated by other ladies who can, and will, in other matters, return equal value to the Farmers' Register—which might be well done by many.]

RICH CALCAREOUS EARTH FOR MANURE IN THE NORTH-WEST PART OF PENNSYLVANIA.

[The following article is taken from a late Meadville Messenger, sent us by the editor. We should infer, from the description, that the earth was like the "rotten limestone" which lies under all the prairie soils of Alabama—and, as appears from Mr. Featherstonhaugh's Report, (see extract at page 147 of this No.) also of the great prairies west of the Mississippi. The fact stated below, presents additional proof, and derived from a different and remote region, of the truth of the opinion which we have before submitted, that the cause of the peculiar features of prairie soils, particularly of the absence of trees, was merely *the presence, in such soils, of a large proportion of lime.* The fact of the earth here called *marl* being made into the "best lime" by burning, is sufficient evidence of the great richness of the material, and its suitableness for

manure. Crawford County is in the north-west part of Pennsylvania, and on the border of Lake Erie.]

About eleven miles north west of this place, (three or four miles north of Brightstown in this county, Crawford, Pa.,) an inexhaustible bed of the *carbonate of lime* in a clayey state *(calcareous marl,)* has been discovered. The clay when burned after the usual manner, produces very good white lime, from the specimen we have seen we would say the *very best lime.* It has been found that at this one place, it covers an extent of one hundred acres, which is prairie land covered with turf to the depth of one foot, under which the marl is found, and although it has been dug to the depth of nine feet, yet no sign of other kind of earth was discovered. Apart from the general uses to which lime is applied, we are sensible that this discovery will effect a new era in the *agriculture* of this section of country, and will, when its uses as a fertilizing manure become extensively known and applied, enhance the value of our lands, two-fold. We hope this discovery will excite such a spirit of inquiry and research as will result in the disclosure of beds of lime in every part of the county; and that persons may be disposed to seek for it from an acquaintance with its nature and uses, and be able to distinguish it from other earths, we shall in some future number devote a column in explanation of its chemical properties, probable localities, and value as a manure. We have no idea that it is confined to any particular spot, but from many circumstances, are firmly of opinion that it will be found near the surface in almost every section of the county.

From the Library of Useful Knowledge—Farmer's Series.

THE VICES, AND DISAGREEABLE OR DANGEROUS HABITS OF THE HORSE.

[Continued from page 104, Vol. III.]

Horses have many unpleasant *habits* in the stable and the road, which cannot be said to amount to *vice,* but which materially lessen their value.

Swallowing without grinding.

Some greedy horses swallow their corn without properly grinding it, and the power of digestion not being adequate to the dissolving of the husk, no nutriment is extracted, and the oats are voided whole. This is particularly the case when horses of unequal appetite feed from the same manger. The greedy one, in his eagerness to get more than his share, bolts a portion of his corn whole. If the farmer can, without considerable inconvenience, so manage it that every horse shall have his separate division of the manger, the horse of smaller appetite and slower feed would have the opportunity of grinding at his leisure, without the fear of his share being stolen from him by his neighbor.

Some horses, however, are naturally greedy feeders, and will not, even when alone, allow themselves time to chew or grind their corn. In consequence of this, they carry but little flesh; they are not equal to severe work; and, if their rack has been supplied with hay when the corn was put into the manger, their stomachs will become distended with half-chewed and indigestible food; they will be incapable of exertion for a long time after feeding, and, occasionally, dangerous symptoms of staggers will occur. The remedy is, not to let such horses fast too long. The nose-bag should be the companion of every considerable journey. The food should likewise be of such a nature that it cannot be easily bolted. Chaff should be plentifully mixed with the corn, and in some cases, and especially in horses of slow work, should, with the corn, constitute the whole of the food. Of this we shall treat more largely under the article 'feeding.'

In every case of this kind the teeth should be very carefully examined. Some of them may be unduly lengthened, particularly the first of the grinders; or they may be ragged at the edges, and may scratch and wound the cheek. In the first case the horse *cannot* properly masticate his food; in the latter he *will not:* for these animals, as too often happens in sore throat, would rather starve than put themselves to much pain.

Crib biting.

This is a very unpleasant habit, and a considerable defect, although not so serious a one as some have represented. The horse lays hold of the manger with his teeth, violently extends his neck, and then, after some convulsive action of the throat, a slight grunting is heard, accompanied by an apparent sucking or drawing in of air. Whether, however, air is actually drawn in, and thus the horse becomes more subject to colic than one without this trick, or whether a portion of air is expelled, showing the previous existence of flatulence and a disposition to colic, are points that have not been settled among veterinarians.

The horse is evidently making the edge of the manger a fixed point, by means of which he may overcome that obstacle which the formation of the soft palate and the back part of the mouth would present to either the expulsion or drawing in of the air, if accomplished through the medium of the mouth. When we consider, however, that any air expelled from the stomach might easily find a passage through the nostril, without the action of crib biting; while it would be difficult or impossible, without some alteration in the natural form and action of the parts at the back of the mouth, and particularly the depression of the epiglottis or covering of the windpipe, to convey air to the stomach, we are inclined to conclude, that this fixed point is used to enable the animal to accomplish this alteration, and suck up and convey a portion of air into the stomach.

The effect of crib biting is plain enough. The teeth are injured and worn away, and that, in an old horse, to a very serious degree; a considerable quantity of corn is often lost, for the horse will frequently crib with his mouth full of corn, the greater part of which will fall over the edge of the manger; and much saliva flows out while the manger is thus forcibly held, the loss of which must be of serious detriment, as impairing the digestion. The crib biting horse is notoriously more subject to colic than other horses usually are, and to a species difficult of treatment, and even dangerous. Although many a crib biter is stout and strong, and capable of all ordinary work, these horses do not generally carry much flesh, and have not the endurance of others. On these accounts, crib biting has very properly been decided to be unsoundness.

It is one of those tricks which are very contagious. Every companion of a crib biter in the same stables is likely to acquire the habit, and it is the most inveterate of all habits. The edge of the manger will in vain be lined with iron, or with sh ep-skin, or with sheep-skin covered with tar or aloes, or any other unpleasant substance. In defiance of the annoyance which these may occasion, the horse will in a very short time again attack his manger. A strap buckled tightly round the neck, by compressing the windpipe, will prevent the possibility of this action; but the strap must be constantly worn, and its pressure is too apt to produce a worse affection, viz. an irritation in the windpipe, which terminates in roaring.

Some have recommended turning out for five or six months; but this has never succeeded except with a young horse, and then rarely. The old crib biter will employ the gate for the same purpose as the edge of his manger, and we have seen him gallop across a field for the mere object of having a grip at a rail. Medicine will be altogether thrown away in this case.

The only remedy is a muzzle, with bars across the bottom; sufficiently wide to enable the animal to pick up his corn and to pull his hay, but not to grasp the edge of the manger. If this be worn a very long time, the horse may be tired of attempting that which he cannot accomplish, and may possibly for a while forget the habit; but in the majority of cases the desire of crib biting will return with the power of gratifying it.

The causes of crib biting are various, and some of them beyond the control of the proprietor of the horse. We have said that it is often the result of imitation; but it is more frequently the consequence of idleness. The high-fed and spirited horse must be in mischief, if he is not usefully employed. Sometimes, but we believe not often, it is produced by partial starvation, whether in a bad straw-yard, or from unpalatable food. An occasional cause of crib biting is the frequent custom of grooms, even when the weather is not severe, of dressing them in the stable. The horse either catches at the edge of the manger, or at the edge of the partition on each side, if he has been turned, and thus he forms the habit of laying hold of these substances on every occasion.

Wind-sucking.

This bears a close analogy to crib biting. It arises from the same causes; the same purpose is accomplished; and the same results follow. The horse stands with his neck bent; his head drawn inward; his lips alternately a little opened and then closed, and a noise is heard as if he were sucking. If we may judge from the same comparative want of condition, and the flatulence which we have described under the last head, either some portion of wind enters the stomach, or there is an injurious loss of saliva. This diminishes the value of the horse almost as much as crib biting; it is as contagious, and it is as inveterate. The only remedies, and they will seldom avail, are tying the head up, except when the horse is feeding, or putting on a muzzle, with sharp spikes towards the neck, and which shall prick him whenever he attempts to rein his head in for the purpose of wind-sucking.

Cutting.

Of this habit we have already spoken at page 252, and we would advise the owner of a cutting horse, without trying any previous experiments of raising or lowering the heels, to put on the cutting foot a shoe of even thickness from heel to toe, not projecting in the slightest degree beyond the rust, and the crust itself being rasped a little at the quarters; and to let that shoe be fastened as usual on the outside, but with only one nail on the inside, and that almost close to the toe. The principle on which this shoe acts has been explained at page 243.

Not lying down.

It not uncommonly happens that a horse will seldom or never lie down in the stable. He sometimes continues in apparent good health, and feeds and works well; but generally his legs swell, or he becomes fatigued sooner than another horse. If it is impossible to let him loose in the stable, or to put him into a spare box, we know not what is to be done. No means, gentle or cruel, will force him to lie down. The secret is that he is tied up, and either has never dared to lie down through fear of the confinement of the halter, or he has been cast in the night, and severely injured. If he can be suffered to range the stable, or have a comfortable box, in which he may be loose, he will usually lie down the first night. Some few horses, however, will lie down in the stable, and not in a loose box. A fresh, well made bed will generally tempt the tired horse to lie down.

Overreach.

This unpleasant noise, known also by the terms 'clicking,' 'overreach,' &c. arises from the toe of the hind foot knocking against the shoe of the fore foot. In the trot, one fore leg and the opposite hind leg are first lifted from the ground and moved forward, the other fore leg and the opposite hind leg remaining fixed; but, to keep the centre of gravity within the base, and as the stride, or space passed over by these legs, is often greater than the distance between the fore and hind feet, it is necessary that the fore feet should be alternately moved out of the way for the hind feet to descend. Then, as occasionally happens with horses not perfectly broken, and that have not been taught their paces, and especially if they have high hinder quarters and low fore ones, if the fore feet are not raised in time, the hind feet will strike them. The fore foot will generally be caught when it has just begun to be raised, and the toe of the hind foot will meet the middle of the bottom of the fore foot. It is a very disagreeable noise, and not altogether free from danger; for it may so happen that a horse, the action of whose feet generally so much interferes with each other, may advance the hind foot a little more rapidly, or raise the fore one a little more slowly, so that the blow may fall on the heel of the shoe, and loosen or displace it; or the two shoes may be locked together, and the animal may be thrown; or the contusion may be received even higher, and on the tendons of the leg, when considerable swelling and lameness may follow.

If the animal is young, the action of the horse

may be materially improved; otherwise nothing can be done, except to keep the toe of the hind foot as short and as round as it can safely be, and to bevil off and round the toe of the shoe, like that which has been worn by a stumbler for a fortnight, and, perhaps, a little to lower the heel of the fore foot.

A blow received on the heel of the fore foot in this manner has not unfrequently, and especially if neglected, been followed by quittor.

Pawing.

Some hot and irritable horses are restless even in the stable, and paw frequently and violently. Their litter is destroyed, the floor of the stable broken up, the shoes worn out, the feet bruised, and the legs sometimes sprained. If this habit does not exist to any great extent, yet the stable never looks well. Shackles are the only remedy, with a chain sufficiently long to enable the horse to shift his posture, or move in his stall; but even these must be taken off at night, otherwise the animal will seldom lie down.

Quidding.

A horse will sometimes partly chew his hay, and suffer it to drop from his mouth. If this does not proceed from irregular teeth, which it will be the business of the veterinary surgeon to rasp down, it will be found to be connected with sore-throat, and then the horse will exhibit some other symptom of indisposition, and the swallowing of water will be accompanied by a peculiar gulping effort. In this case the disease (catarrh, with sore throat) must be attacked, and the quidding will cease.

Rolling.

This is a very pleasant and perfectly safe amusement for a horse at grass, but cannot be indulged in the stable without the chance of his being dangerously entangled with the collar rein, and being cast. Yet, although the horse is cast, and bruised, and half-strangled, he will roll again on the following night, and continue to do so as long as he lives. The only remedy is not a very pleasant one to the horse, nor always quite safe; yet it must be had recourse to if the habit of rolling is inveterate. 'The horse,' says Mr. Castley, in the *Veterinarian*, 'should be tied with length enough of collar to lie down, but not to allow of his head resting on the ground; because, in order to roll over, a horse is obliged to place his head quite down upon the ground.'

Shying.

We have briefly treated of the cause of this vice at page 98, and observed that while it is often the result of cowardice, or playfulness, or want of work, it is at other times the consequence of a defect of sight. It has been remarked, and we believe very truly, that shying is oftener a vice of half or quarter-bred horses, than of those who have in them more of the genuine racing blood.

In the treatment of shying, it is of great importance to distinguish between that which is the consequence of defective sight, and that which results from fear, or newness of objects, or from mere affectation or skittishness. For the first, the nature of which we have explained at page 98, every allowance must be made, and care must be taken that the fear of correction be not associated with the imagined existence of some terrifying object. The severe use of the whip and the spur cannot do good here, and are likely to aggravate the vice ten-fold. A word half encouraging and half scolding, with a gentle pressure of the heel, or a slight touch of the spur, will tell the horse that there was nothing to fear, and will give him confidence in his rider on a future occasion. It should be remembered, however, that although a horse that shies from defective sight may be taught considerable reliance on his rider, he can never have the cause of the habit removed. We may artificially strengthen the human sight, but the horse's must be left to itself.

The shying from skittishness or affectation is quite a different affair, and must be conquered: but how? Severity is out of place even here. If he is forced up to the object by dint of correction, the dread of punishment will afterwards be associated with that object, and on the next occasion, his startings will be more frequent and more dangerous. The way to cure him is to go on, turning as little as possible out of the road, giving the animal a harsh word or two, and a gentle touch with the spur, and then taking no more notice of the matter. After a few times, whatever may have been the object which he chose to select as the pretended cause of affright, he will pass it almost without notice.

In page 225, under the head 'breaking in,' we have described how the colt may be cured of the habit of shying from fear or newness of objects; and if he then be accustomed as much as possible to the objects among which his services will be required, he will not possess this annoying vice when he grows to maturer age.

Mr. John Lawrence, in his last pleasing work on the horse, says, 'These animals generally fix on some particular shying butt: for example, I recollect having, at different periods, three hacks, all very powerful; the one made choice of a windmill for the object or butt, the other a tilted wagon, and the last a pig led in a string. It so happened, however, that I rode the two former when amiss from a violent cold, and they then paid no more attention to either windmills or tilted wagons than to any other objects, convincing me that their shying when in health and spirits was pure affectation, an affectation however, which may be speedily united with obstinacy and vice. Let it be treated with marked displeasure, mingled with gentle, but decided firmness, and the habit will be of short endurance.*'

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* 'We will suppose a case, a very common one, an every day one. A man is riding a young horse upon the high-road in the country, and meets a stage coach. What with the noise, the bustle, the imposing appearance altogether, and the slashing of the coachman's whip, the animal at its approach erects his head and crest, pricks his ears, looks affrighted, and no sooner comes alongside of the machine than he suddenly starts out of the road. His rider, annoyed by this, instantly commences a round of castigation with whip, spur, and curb, in which he persists until the horse, as well as himself, has lost his temper; and then one whips, spurs,

Shying on coming out of the stable is a habit that can rarely or never be cured. It proceeds from the remembance of some ill-usage or hurt which the animal has received in the act of proceeding from the stable, such as striking his head against a low door-way, or entangling the harness. Coercion will but associate greater fear and more determined resistance with the old recollection. Mr Castley, to whom we are indebted for much that is valuable on the subject of the vices of the horse, gives an interesting anecdote, which tends to prove that while severity will be worse than useless, even kind treatment will not break a confirmed habit. 'I remember a very fine gray mare that had got into this habit, and never could be persuaded to go through a door-way without taking an immense jump. To avoid this, the servants used to back her in and out of the stable; but the mare happening to meet with a severe injury of the spine, was no longer able to back; and then I have seen the poor creature, when brought to the door, endeavoring to balance herself with a staggering motion upon her half-paralyzed hind extremities, as if making preparation and summoning up resolution for some great effort; and then, when urged, she would plunge headlong forward with such violence of exertion, as often to lose her feet, and tumble down "altogether most pitiable to be seen." 'This I merely mention,' he continues, 'as one proof how inveterate the habits of horses are. They are evils, let it always be remembered, more easy to prevent than cure.'

Slipping the Collar.

This is a trick at which many horses are so clever that scarcely a night passes without their getting loose. It is a very serious habit, for it enables the horse sometimes to gorge himself with food, to the imminent danger of staggers; or it exposes him, as he wanders about, to be kicked and injured by the other horses, while his restlessness will often keep the whole team awake. If the web of the halter, being first accurately fitted to his neck, is suffered to slip only one way, or a strap is attached to the halter and buckled round the neck, but not sufficiently tight to be of serious inconvenience, the power of slipping the collar will be taken away.

Tripping.

He must be a skilful practitioner or a mere pretender who promises to remedy this habit. If it arises from a heavy forehand, and the fore legs being too much under the horse, no one can alter the natural frame of the beast: if it proceeds from tenderness of the foot, grogginess, or old lameness, these ailments are seldom cured; and if it is to be traced to habitual carelessness and idleness, no whipping will rouse the drone. A known stumbler should never be ridden, or driven alone, by any one who values his safety or his life. A tight hand or a strong bearing-rein are precautions that should not be neglected, but they are generally of little avail; for the inveterate stumbler will rarely try to save himself, and this tight rein may sooner and farther precipitate the rider. If, after a trip, the horse suddenly starts forward, and endeavors to break into a canter, the rider or driver may be assured that others before him have fruitlessly endeavored to remedy the nuisance.

If the stumbler has the foot kept as short and the toe pared as close as safety will permit, and the shoe be rounded at the toe, or have that shape given to it which it naturally acquires in a fortnight from the action of such a horse, the animal may not stumble quite so much; or if the disease which produced the habit can be alleviated, some trifling good may be done, but in almost every case a stumbler should be got rid of, or put to slow and heavy work. If the latter alternative be adopted, he may trip as much as he pleases, for the weight of the load and the motion of the other horses will keep him upon his legs.

Weaving.

This consists in a motion of the head, neck, and body, from side to side, like the shuttle of a weaver passing through the web, and hence the name which is given to this peculiar and incessant action. It indicates an impatient, irritable temper, and a dislike to the confinement of the stable; and a horse that is thus incessantly on the fret will seldom carry flesh, or be safe to ride or drive. There is no cure for it, but the close tying up of the animal, except at feeding time.

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and pulls, and the other jumps, plunges, frets, and throws up his head, until both, pretty well exhausted by the conflict, grow tranquil again and proceed on their journey, though not for some time afterwards in their former mutual confidence and satisfaction. Should they in their road, or even on a distant day, meet with another coach, what is the consequence? That the horse is not only more alarmed than before; but now, the moment he has started, being conscious of his fault, and expecting chastisement, he jumps about in fearful agitation, making plunges to strike into a gallop, and attempting to run away. So that by this correction, instead of rendering his horse tranquil during the passage of a coach, the rider adds to the evil of shying that of subsequently plunging, and perhaps running away.'—The *Veterinarian*, by Messrs. Percival and Youatt, vol. i., p. 96.

From the Horticultural Register.

ON PARTY SPIRIT IN HORTICULTURE.

Start not, reader; the caption of this article forebodes no bloodshed in America, and however violent the spirit, the subject is merely a *Rose*.

It is in the great commercial, free Hanseatic city of Hamburg, in Germany, that this flame of discord has been kindled, which threatens even to falsify the line of the great delineator of the human character, that,

"A rose by any other name would smell as sweet."

It appears that Messrs. Booth, proprietors of the Flottbeck Nursery, near Hamburg, had raised a new rose from the seed of the old and well known Maiden's Blush, which is described as wonderfully beautiful (wunderschön) and of which they had consequently sold a large quantity. This they called in their catalogue the Queen of Denmark rose.

Professor Lehmann, Director of the Hamburg Botanic Garden, in his descriptive catalogue remarks on a variety of the rose, there called La Belle Courtisanne, that this rose was described in France in 1806 as a hybrid between the old Dutch Hundred Leaf and the Maiden's Blush.

The roses being identical, Messrs. Booth felt the honor of their well regulated nursery at stake, and after some slight warfare in their respective annual catalogues, these gentlemen published a pamphlet on the subject, which was replied to by the Professor in the newspaper. This produced a very bitter and personal rejoinder from Messrs. Booth, in a second pamphlet, which was distributed gratuitously.

The Professor having stated that the rose in question was figured in the magnificent and expensive publication, with colored plates, by the celebrated Redouté, fellow pupil with Audubon, of David the painter, he procured the work and left it out for public exhibition. Redouté's figure was generally considered identical with Booths' Queen of Denmark, although these gentlemen would scarcely allow it.

A hot war of affidavits, letters of proof, and documents now commenced, the most interesting of which is a letter from the distinguished veteran botanist, Thouin, who died in 1826, dated in 1824, which gives some good explanations of the Professor's strong declaration, and shows that the Belle Courtisanne rose, under this name, was sent by Thouin to the Hamburg Botanic Garden, from whence it was also distributed to many other gardens.

Messrs. Booth hereupon published gratis a most offensive pamphlet, entitled "Victory of the Queen of Denmark Rose, unveiling the motives of the attack of Professor Lehmann." To this the Professor published a cool and well written reply; the friends on each side began to publish also—accusation and retorts were liberally scattered and the plague of party spirit spread far and wide. We do not think, however, it will terminate in a continental war.

That elegant German writer, Wieland, in his fiction of the history of the people of Abdera, a town in ancient Greece, relates that a citizen of the town hired an ass; the day being sultry, he took it into his head during his ride, to dismount from the patient animal, and sit down for a time in the shade of the creature's body. The owner demurred to this proceeding, and demanded additional hire, having, as he stated, only let the ass, and not his shadow. After a warm altercation, both returned to the city and went before the magistrate. The question now became altogether one of party, in which no neutrality was permitted, and the whole city was soon divided into two violent sides, one of which obtained the appropriate distinctive appellation of *Asses*, and the other of *Asses' shadows*. During a popular commotion on this quarrel, the innocent cause of it was torn limb from limb—thus even the shadow of an ass was annihilated, and had not some other question of equal importance been started, which threw this into oblivion, the result would no doubt have been disastrous. We disclaim the slightest idea of an offensive application of the above story; it is enough to show how well those understand the human heart who describe a trifle as sufficient to inflame the bad passions of mankind.

The highly talented German botanist, Nees Von Esenbeck, writes two letters on this quarrel, which have been published in the *Allemeine Botanische Zeitung*, (General Botanical Newspaper) commencing in something like the following lively vein:

"How much that is beautiful, joyous, and endearing has been written and said on the rose; how much that is delightful on its character? how many exquisite ideas has it inspired to be breathed by love? The beauty of this flower must sink deepest into our imagination, when its appearance forces us to associate with it every feeling that is tender, delicate, and luxurious. How anomalous, how absurd, then, the idea that the rose can engender feelings of division and strife. I am convinced that in the beautiful manuscript of my young friend Doring, 'On the Character and Nature of the Rose,' there is not even the smallest chapter on the fruit of rose as an apple of discord."*

It is hardly worth while to read every statement and counter statement in this quarrel, but we believe that Messrs. Booth, the nursery men, must have the best of it, as undoubtedly the excitement has enabled them to sell the greater part of their stock of this rose, as well as of many others approaching to it in character, to enable a comparison; while the publishers of Redouté's work on roses have certainly disposed of several copies to persons who have withstood the best newspaper puffs that ever were penned.

[There have been very many instances, in modern as well as ancient times, of parties being formed, and bitter feuds engendered among countrymen, neighbors, and former friends, for causes not more important, and even less understood, than those from which have originated the *rose factions* mentioned above. And most parties agree with those of the *roses* in another respect—that the few knaves who lead, on both sides, may gain by the feud, while the many fools who follow them, are sure to be losers.]

From the Horticultural Register.

ON THE VEGETABLE PRODUCTION OF INDIA RUBBER, AND ITS APPLICATION TO MANUFACTURES.

At the present time, when attention to this subject is so much awakened, we deem an account of it will be of some interest to our general readers, particularly as an entirely new and extraordinary use for it has been very recently discovered and patented in England.

The India rubber in the state it is imported into this country, is the concrete juice of the Hevea caoutchouc, or guianensis, a Euphorbiaceous plant which abounds in South America; it is also produced from the Apocyneous plants, as Urceola elastica, of Sumatra, Vahea Madagascariensis, Ficus elastica, of the East Indies; and from Artocarpeous ones, as Ficus indica, the Banyan tree also of the East Indies, Artocarpus incisa, the Bread fruit tree, from the West Indies, and from many trees in Africa. In fact, plants producing it grow in almost all countries in or near the tropics. The produce of these is sometimes equal to nearly

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* The apple was placed by Decandolle in the Rosaceous family, from which it is now, however, properly separated. It is classed with others in a distinct order called Pomaceæ, from Poma, an apple. The figure of Nees Von Esenbeck, of the rose fruit being an apple of discord is therefore not so far wrong as may appear at first sight.

two-thirds the weight of the branch tapped, and when exhausted, but a few months' rest are required to replenish the vessels; the supply is therefore equal to almost any consumption, although no doubt exists that this will increase amazingly. A small quantity has been manufactured from the juice of a tree in the Glasgow botanic garden, and exposed to the public at an agricultural museum at Stirling in Scotland.

Mr. Nuttall observes that the juice of the Milkweed, Asclepias Syriaca, which grows plentifully in the vicinity of Boston, as well as of that of the Apocynum is convertible into a substance resembling gum elastic.

A patent has been very recently granted in England for the manufacture of an essential oil or liquid, by distilling India rubber at a given heat in close vessels made for that purpose; by redistillation it comes over pure and transparent. This oil has many singular characters. It is the lightest liquid known, being of less specific gravity than sulphuric ether, it is exceedingly volatile, yet the gas formed when it evaporates is the heaviest gas known, and may be poured out of one vessel into another like water, as was exhibited at a late lecture given on it, by Dr. Faraday in London. The rapid evaporation of it, produces intense cold; one minute and a quarter was sufficient to reduce the thermometer from 60° Fahrenheit to 10° below zero, by covering the bulb with muslin and blowing on it with a bellows, while this liquid was dropped on it.

On removing the muslin at about 10° above zero, in another experiment, the bulb was observed to be covered with a concrete substance resembling snow, termed by Dr. Faraday. Bicarburet of Hydrogen, supposed to have been previously discovered by M. Mitscherlich.

On mixing this produce of India rubber with cocoa-nut oil, which is known to be always hard at the usual temperature of the atmosphere, in the proportion of one-quarter of the former to three-quarters of the latter, the cocoa-nut oil is liquified and gives a most brilliant flame.

Mr. Beale has taken out a patent in England, for a new lamp to burn this mixture; one of them was exhibited at the before mentioned lecture, and surprised the audience by its peculiar brilliancy.

It mixes readily with oils used for painting, and evaporates so speedily that the paint dries within an hour after laying it on. As it is extremely cheap and does not in the least injure the most delicate colors, it is probable that it will be considerably used for this purpose.

One of its most important properties, however, is that of completely dissolving all the gum resins, particularly gum copal, without the assistance of heat, therefore the varnish may be prepared without the usual danger from fire. It is also a perfect solvent in cold, of India rubber itself, and when this is laid on any substance in its liquid state, the oil evaporates and leaves the India rubber without the slightest alteration of its character, fixed on the material.

Messrs. Enderby & Co. of Greenwich, near London, have established a manufactory of this substance on a large scale, and have sent an agent to South America for the purpose of procuring a constant supply—they have always about one hundred tons to operate on.

The principal object of their manufactory, is to saturate the fibres of the Phormium tenax or New Zealand flax, with this liquid previous to its being made into cables, thereby rendering it totally impervious to water, and protecting it altogether from the effects of damp and moisture.

It has been named Caoutchouchine from Caoutchouc, another name for India rubber—which it is supposed, if carefully managed on distillation, would give nearly weight for weight of this oil.

Being so recently discovered, its properties are of course by no means entirely developed, and much remains yet to be known on the subject. Dr. Faraday's lecture is represented to have been most interesting—he exhibited the juice of the India rubber in its fresh state and explained how it deposited the article of commerce—he entered also into a chemical analysis of it, the repetition of which here would be trespassing too far on our horticultural readers.

J. E. T.

From the Genesee Farmer.

ASHES AS MANURE.

Farmers who now have ashes on hand, will find it profitable to apply it as a top dressing to their corn, instead of selling it at the asheries. An application of ashes to this crop will not unfrequently cause an increase of more than five times the value of the ashes at the price they are commonly sold. Ashes which have been kept perfectly dry and uninjured are far preferable to leached, though the latter is very valuable. When it is applied to corn, one gill of that which is fresh or unmoistened will be enough; if leached, half a shovel full will not be too much. It is recommended that when unleached ashes is appled, it be placed on the surface round each hill so as not to touch the plants, as it might otherwise injure them by its causticity.

LEGAL RESPONSIBILITY OF POSTMASTERS TO PUBLISHERS FOR A VERY COMMON NEGLECT OF THEIR DUTY.

"The proprietor of this paper" says the Philadelphia Times, "last week, recovered judgement against a postmaster for a paper not taken from his office, of which he neglected to inform him. All postmasters who do so, render themselves liable, and ought to be held accountable."

We earnestly wish that every *careless* postmaster in the United States, and especially some of those to whose offices the Farmers' Register is sent, would read and profit by this warning. With many of these officers the most culpable neglect of their sworn duty in this respect, (if not worse than neglect,) is frequent. We have suffered by it, in common with most of our editorial brethren, by some very long continued and most gross offences of this kind—and if no other redress can be obtained, we shall try whether the law will afford it in Virginia, as well as in Pennsylvania. If publishers generally would adopt such a course, they would check much of the disposition to indulge in gross neglect, if not in petty pilfering.

From the New York Farmer.

BROOM CORN.

The cultivation of broom corn is carried on to a very great extent on some of the alluvial lands on the Connecticut river, and in small patches in many of the interior towns. The towns of Hadley and Hatfield raise large quantities, which are manufactured into brooms, and distributed throughout the country. The seed is considered of about two-thirds of the value of oats, and, mixed with corn, makes an excellent provender for the fattening either of swine or neat cattle. The return of seed is somewhat precarious; but often it is abundant, and will more than pay the whole expense of cultivation and preparing the crop for the market. I have known a case in which 150 bushels of good seed have been obtained from an acre; and I have been assured, on good authority, of a still larger yield, though this is not frequently to be expected. One thousand pounds of broom to an acre is a very good crop. It will pay well for manuring and good culture. No crop is more beautiful than the standing corn when in perfection. It frequently attains a height of 12 to 15 feet. The stalks of the plant are very long and hard, and, therefore, rather difficult to load upon a cart. They are considered as of no value but for manure. The usual practice is to table the corn, that is, to cut off the top, or tassel the broom, as it is called, about two feet from the top, and bending the stalks of two rows together, lay it down until it is seasoned and fit to be carried in. The remainder of the stalks are then burnt in the spring in the field, and some little advantage is derived from the ashes. A much better way, it is thought, is, after gathering the crop, to cut the stalks and lay them lengthwise in the rows, and plough them immediately under. They will become entirely decomposed by spring. A still better mode is to carry them into the cattle and sheep yards, where they become incorporated with the manure, and make a valuable addition to the compost heap.

The seed is planted in rows, wide enough apart for the plough to pass conveniently between them, and dropped in hills about eighteen inches from each other. Four or five stalks are considered sufficient to remain in a hill—more are sometimes allowed. The cultivation and manuring is more than for Indian corn. It may be manured in the hill or by spreading, or in both ways, as you have the means of high cultivation, which this plant will bear. The stalks are not eaten by cattle, nor even browsed by them; but I am not certain that the leaves would not furnish a good feed for young stock, if stripped early, when tender, and well cured, as the Indian corn blades are cured at the south. What would be the effect of such mutilation upon the crop itself, and whether it would compensate for the labor, are inquiries which I am not able to answer, and in respect to which I cannot learn that any experiments have been made. It is an important subject for experiment. As it is at present managed, the plant returns little to the ground compared with Indian corn; and the Hadley and Hatfield farmers are obliged to connect with it the fattening of beef to a considerable extent, to furnish manure for their broom corn.

It is deemed a good crop when the broom commands five cents per lb. The price has heretofore been subject to great fluctuations. At one time it was the custom for every farmer to make up his own brooms, and then to go and sell them where he could. This was bad for all parties. It brought too many competitors into the market; and often unduly depressed the price, and the buyers were often obliged to put up with an inferior article. Now the manufacturing and the growing of the broom are in different hands; and the farmer, as soon as his broom is ready for the market, finds a purchaser at a steady price; and the manufacturer feels that his reputation, and consequently his success, are concerned in the quality of the article which he furnishes.

It is a little remarkable, that notwithstanding the extent and importance of this product, for one manufacturer within a few miles of me makes several hundred thousands of brooms a year, that in no book of agriculture in my possession can I find any account of the cultivation of this plant, not even in that excellent New England work, "*The Complete Farmer.*" The Shakers for a long time almost monopolized the raising of the plant and the manufacture of brooms; and their brooms, which, like the other manufactures of this industrious community, were always of a superior quality, usually commanded a high price, generally 42 cents or more. Corn brooms are now frequently sold from eight to twenty-five cents; but many of them are like Pindar's razors, "made to sell." The Shakers, however, maintain the quality of their manufacture. The handles, in an unfinished state, are furnished for a cent a piece; the wiring and the tying on are usually done by the hundred. The scraping the seed from the brush is an unpleasant business, and often very injurious to the eyes. The manufacture, where it has been carried on extensively and with ample capital, has yielded encouraging profits.

An intelligent and enterprising farmer in my neighborhood, who last year cultivated three acres and one-half of broom corn in our alluvial meadows, has been kind enough to furnish me a detailed account of the expense of cultivating an acre, which may be relied on for its exactness, but in which the rate of labor is probably over-estimated by the day. His broom was sold in the autumn at eight and one half cents per lb. It readily commands this spring 12½ cents; had he fortunately retained his broom until this time, the profits would have been greatly enhanced, while the expenses would, of course, have remained the same.

Account of the expenses of cultivating an acre of broom corn in Deerfield meadows, in the year 1834, by Mr. Alvah Hawkes:

One ploughing, 12th May,	$1.25
Holeing out, one-third of a day's work,	34
Ten loads of manure, at 75 cents,	7.50
Putting manure in the hill,	2.00
Planting, one day's work,	1.00
Seed, four quarts, at 75 cents per bushel,	10
Hoeing, first time 3½ days,	3.50
do. 2d do. 3 do.	3.00
do. 3d do. 2½ do.	2.50
Horse and boy to plough for the season,	1.00
Tabling and cutting, four days,	4.00
Gathering, carting, and packing away,	2.50
	$28.68

The expense of cultivating one acre is $28.68

cents, the labor being rated at one dollar per day, which is more than the actual cost, as I hired my laborers by the month, at from six to ten dollars per month. The yield was at the rate of 991 pounds to the acre. Had all my ground been fully stocked, it would have exceeded ten hundred pounds per acre.

The expense of scraping the brush for the seed was thirty-three cents per hundred pounds. The brush was sold at 8½ cents per pound. The crop of seed was light and poor; fifty bushels to three acres, worth 16⅔ cents per bushel, or $8.33 to an acre.

Summary expense of cultivation of one acre as above,		$28.68
Scraping 1000 pounds,		3.30
Board of man five days,		1.07
Rent of land, say $16 per acre,		16.00
		$49.05
Sale of brush, 1000 lbs. at 8½ cents,	85.00	
Seed upon one acre,	8.33	
		93.33
Net profit on one acre,		$44.28

The sale of the brush at 12½ cents per pound, the present price, would have enhanced the profits forty dollars, and made them $84.28. This is very remarkable, and certainly affords ample encouragement to labor. That it can be often done is not to be expected; and yet there is nothing extraordinary in the process. The uncertainty of the seasons is something, and the fluctuations in the market prices of broom are great. The amount of crop, though large, was not more than can usually be commanded by good and generous cultivation. Many of our lands, besides the alluvial meadows, are capable of producing good crops; and the great yield of 150 bushels of seed to the acre mentioned above, with broom, of course, in proportion, was produced in one of the most rough and rocky towns in the commonwealth, and on land which owed every thing to good management. I hope the length of these details may be excused.

H. C.

Meadowbanks, (Mass.) May 7th, 1835.

From the Southern Agriculturist.

ON THE DISEASES OF TREES, AND METHODS OF CURE.

When it is observed of a tree, that it does not shoot forth, we are certain that it is either punctured to the liber or white bark, or that it is deficient in nourishment from the poverty of the earth, in which it is planted, that will in time prove its destruction. The remedy is to lay bare the roots in the month of November, for three feet around the tree, and put in three or four baskets of well rotted cow manure; throw upon this three or four buckets of water to force the manure amongst the roots, after which fill up the hole with the same earth that was taken out of it; the roots becoming refreshed, throw out new fibres, and the year after the tree will be seen shooting forth its green foliage again. If the summer is very dry you must throw two buckets of water around it from time to time. The winter following in trimming the trees, you must not leave as many branches as on those that have always been in good health. Trees of every description are cured in this manner.

Bad soil.—Fruit trees accommodate themselves more to warm light earth than to that which is cold and wet.

Diseased roots.—Frequently a tree, all of a sudden, after have thriven many years, will become weak and languid: this arises from the roots becoming rotten from having been planted too deep, from the many fibres, from humidity or otherwise. This is easily remedied by laying bare the roots in autumn, and cutting off such as are decayed, up to the sound wood.

Exhausted earth.—If the tree languishes in its sound roots, the malady arises from the earth being too much exhausted. To reanimate it, remove the exhausted earth and replace it with new; afterwards throw around the foot of the tree two good baskets of cow manure, if the earth is warm, or that of the horse if it is cold, and when the time arrives to trim it, cut out the old wood. If it does not shoot forth well the succeeding year, it ought then to be dug up and thrown away.

To regenerate old trees.—When you have in your garden a very old tree, whose branches on the right and left indicate dying, you may calculate the cause to be in the roots: it wants nourishment, and the earth about its feet is too old, exhausted and dry. To give it again health and vigor, lay bare the roots in the month of November, for four feet square all around them so as not to injure them; afterwards throw five or six baskets of well rotted cow manure above the roots, the fall and winter rains will decompose it; if the winter is dry, you must water it, in order that the liquor of the manure may become a kind of pus to nourish the roots; the sap will begin to flow, and the earth and tree revive. In the month of February, cut the old branches to the body of the tree, covering the wound so as to prevent either rain or the sun from doing any injury. After the first year, the branches will be three feet; and, if it is a tree which ought to be trimmed, the winter after trim the branches a foot long. This manner of resuscitating all kinds of trees is excellent.

Trees diseased on one side only.—If a tree is diseased on one side and vigorous on the other, lay the roots entirely bare, remove the diseased part, and cut the larger roots in order to make the tree equal, and the circulation of the sap more general; put new earth above the roots, even if they should not be unhealthy, and two or three baskets of manure as above.

When you trim this tree, leave the vigorous side long, and you must leave all the fruit branches, even the weakest, so as to draw the sap: trim very close the diseased side; cut off all useless branches, and leave a few fruit branches.

Yellow leaves.—This disease arises often from the same cause as that of the disease last spoken of, that is to say, exhausted earth. In such case administer new earth mixed with manure reduced nearly to that of common earth; or, without entirely uncovering the roots, with ashes and soot, these materials are very good for light earths. When the ground is cold, pigeon dung is very good, particularly where it has been in a heap for two years, to ameliorate its strong heat; spread it

an inch deep about the foot of the tree, and in the month of March following bury it. For the want of this dung, you must take away the old earth from around the tree and replace it with new, mixed with fine well rotted horse manure. If the yellowness arises from the earth being damp, take horse-dung mixed with water, so as to form a kind of pap, make a trench around the foot of the tree, pour in the mixture, cover it, and let it thus remain: it will reanimate it. If the yellow leaves arise from a contrary cause, that is, from the soil being too light and dry, you must as soon as the month of November arrives uncover the roots, and put above them the scrapings or settlings of a pool, well drained, worn out, and exhausted street mud; hog-dung or other similar manure: these simple and easy means will resuscitate them.

A tree often becomes yellow from having given too much fruit, and exhausting its substance. In this case you must pull off a part of the fruit and apply fresh nourishment to the roots.

When a tree appears to languish, make a circle around the foot of it, in which you must put any convenient manure; in trimming it, cut off all superfluous wood, and after having filled up the hole in which you have put the manure, leave nature to act, and she will resuscitate it soon. In digging around the tree, keep off at from two to four feet distance, observing as you approach the tree to dig carefully around the mound in which the roots are formed.

Sterility.—Open the earth about the foot of the tree, cut off the extremities of the large roots, shorten those that are too long or far off, and all the small ones near the trunk; throw good new earth upon them and cover them up.

Means to produce fruit from trees which flourish well, but whose fruit becomes blighted almost every year.—There are some trees which are charming to the sight when in blossom, but which retain none of their fruit: in this case, at least six buckets of water thrown around them when in full bloom, will answer a good purpose. If you have not so much water, you may refreshen the tree by sprinkling the buds. When the fall of the blossoms is in too great an abundance, bleed the tree or prune the roots.

Inertness of the sap.—In very cold and dry summers in which there is not much rain, it happens that the sap ceases to flow by degrees. You will then see a great portion of the fruit, particularly peaches, which have the most need of a large stock of sap to acquire maturity, fall or prove abortive. The only remedy in this case is to open around the foot of the tree, and to throw in a bucket of water to open the pores and revive the sap, which will prove well that watering and vigilance are necessary in gardening.

When the spring is dry and cold, it happens often that a peach tree does not shed its blossoms, the flower attaching itself to the small nut of the peach, dries it up and makes it fall; to remedy this, you must bare the roots and throw in buckets of water, and when it is dried up, cover them again with earth, and continue watering them every week during the months of March and April, until you find the fruit safe and well grown; this raises the sap and saves the fruit; it is good to water freely peach and apricot trees during the great heat of summer, and above all, when the fruit is approaching to maturity. When the fruit is well grown, the tree must be thinned of those that are superabundant, which not only makes the fruit grow larger but better, it also preserves the vigor of the tree, which would become ruined in two or three years, if you do not proportion the fruit to the strength of the tree. Peaches, nectarines, and apricots, must be thinned in May. Only a few fruit must be suffered to remain on the weak branches.

When the heat is great and a continual drought, at the end of July, and during the month of August, it is good to throw around the foot of the tree, and particularly the peach, a bucket or half bucket of water, so as to rouse the sap and prevent the fruit from falling half ripe. When you observe the tree languish and the fruit advance very slowly and fall in great numbers, you may be sure it is in the sap: you must then put water to the foot of the tree, for which purpose you must make a trench around it at a short distance, so that the water may be better held, cover the earth with leaves or straw, and throw water on it, so as to enable the earth to preserve its freshness.

To give fruit a fine color, about the end of June clip with a scissors those leaves that surround the fruit, and when they have grown nearly to their size, remove all their leaves from around them, so that the dew, rain and sun may penetrate, paying attention to the soil, the weather, and the strength of the fruit, for delicate fruit becomes scorched if laid bare too soon, and if too late will remain without color and taste. Peaches and apricots should be laid bare only fifteen days previous to their being ripe, otherwise the fruit would become defective and imperfect about the stone. By jetting water with a syringe upon fruit exposed to the sun two or three times a day, you will give it a peculiar and curious color, but at the same time impair the quality.

When the severity of the heat occasions the fruit to fall, instead of watering, dig round the roots two inches deep, which fill up with the ashes of wood, and to prevent the wind from blowing it away, cover this ashes with earth.

Peaches and apricot trees are liable to what is termed the blight, which is an injury that shows itself by the leaves becoming crimped, shrivelled, dull and yellow, they fall about the first rain; you have nothing to do but first to remove all the blighted leaves, so that the new foliage of the succeeding spring by force of the sap of those which have been blighted, come quicker.

To remove gum you must with a proper instrument cut down to the inner part of the tree, and cover the wound with dry earth tied on with a cloth.

This is the general method of treating diseased trees in France, which from similarity of climate with that of this country, will apply here. Many persons believe it to be only necessary to plant a tree, and that nature will do all the rest. It is true, we must depend upon nature for the success of our endeavors; but we must recollect that the fruit trees we cultivate, are not indigenous to this climate, and that our want of skill and judgement in planting and nourishing them, may embarrass the operations of nature in bringing the fruit to perfection. It becomes necessary, therefore, to ensure success, that we should aid nature in her operations, by removing all obstructions to her efforts, and furnishing the proper attention and

nourishment for the prosperity of the tree. In order to effect this, observation and experiments are necessary; and ordinary care and attention to the method prescribed above, will be sufficient to accomplish our purpose.

How much, then, is to be deprecated that want of zeal, which is so clearly manifested in this section of the country in relation to the cultivation and care of fruit trees. Providence has peculiarly blessed us with the means of indulging in most of the luxuries enjoyed by other sections of the globe, but our apathy appears to have created a total disregard to her munificent blessings in this respect. There is no spot on earth where most of the stone fruit of other climes, could be cultivated in more perfection than in this State. The diversity of soil produces diversity of fruit, and although, on Charleston Neck, peaches and nectarines are destroyed by various insects, yet, all kinds of plums and cherries may be raised in great perfection: some of the latter raised there by Mr. Michel, are equal in every respect to any ever produced in a more northern climate. Cultivators instead of importing and increasing the fine plums of France, appear to be satisfied with the miserable trash that grow unheeded and uncared for in thickets. This negligence is reprehensible and ought to be corrected.

A FRENCHMAN.

From the Charleston Mercury.

WHITTEMORE'S IMPROVED COTTON GIN.

We had the pleasure the other day of examining the gin described in Mr. Whittemore's advertisement, and observing its mode of operation; and we would advise every Sea Island planter in the city to go and do so also. The advertisement falls short of justice to the simplicity and completeness of the mechanism, which is admirable throughout. The cotton is ginned without breaking the seed or injuring the staple, the rollers being preserved from being heated by friction rollers. The moving power is applied somewhat on the principle of the treadmill, the horse or ox being placed upon a revolving floor which moves from the weight of the animal, and obliges him to keep his feet in motion. By this means the motive power is communicated by the use of the endless chain to the cylinder above, to which the wheels of the gins are similarly attached.

One of the gins is made to work either by the treadle, or by the machinery; and it is very far superior in every respect to the common foot gin. As far as we are judges, it is altogether the greatest improvement on the Sea Island cotton gin that we have seen. The moving power may be used with ease for other purposes, such as to work the thrashing machine, for which purpose it is in extensive use by the northern farmers.

The advantages of these gins, are the following:—greater durability—less liability to get out of order—getting out more cotton in a shorter time, and cleaner, than any previous invention. The trifling expense, and great ease with which they are propelled; the very small space occupied by the whole machinery; the prevention of all heat from friction, the cotton does not "backlash" or wind and entangle itself round the rollers; all the parts subject to wear are of cast steel: they can be worked by the treadle or by horse power, at pleasure; the rollers can be taken out and replaced in one gin, without interrupting the works of the others, and the ginner need not be detained more than two minutes while it is doing.

But the planter need but visit it to be convinced of its important advantages over the gins in common use on our plantations.

ON THE SOILS AND AGRICULTURAL ADVANTAGES OF FLORIDA.—No. 1.

To the Editor of the Farmers' Register.

Plantation Wascissa,
Florida, 6th June, 1835.

Though unknown to you, I shall not apologise for this intrusion upon your attention. The spirit of your widely circulating Register, solicits the contributions of all farmers, and though a very humble one, I do not hesitate to exercise this privilege of my vocation. Another ambition also incites me to write publicly—it is, to promulgate throughout the exhausted districts of the more northern and densely populated states, the increasing value and prosperity, in lands and health, of this territory; and to counteract, by the simple statements of personal observation, the influence of exaggerated reports, which have for some years so materially checked the advancement of Florida, and turned from her the flow of northern emigration. Abler pens would doubtless accomplish this object with more elegance of diction, as well as with more successful results; but in their indolence, truth, though uttered with simplicity, may prove sufficiently interesting, to pardon the officiousness of my egotism.

I have taken with increased gratification the last two volumes of your valuable periodical, and faultless as it is, I would suggest with deference, your devoting more of its columns to agricultural practices and improvements, adapted to the "*far south.*" We are here extremely limited in book farming, and generally ignorant of "making two blades of grass grow where one grew before"—and conceiving that with you lay the ability of instruction, I have regretted that so much of your publication could not be practically applied to our new lands, and *pioneering* systems.

Some two years since I came first to Florida, after a residence of some years, as a sugar planter, in the British West Indies; from whence I was forced, with a sacrifice of property and prospects, by the mad abolition act of the infatuated English government. My object in selecting Florida as a residence, was to establish, under a secure and honest constitution, a sugar growing estate: and before I conclude these letters, (to be only continued under your approbation,) I shall express my opinion and experience as to its practicability. At present, I shall endeavor to describe the character of the various soils, peculiar to the different sections of this valuable and little known peninsula, which I have visited—commencing at the Atlantic shore, and proceeding westward.

The territory of Florida is divided into four grand districts, each of which are subdivided into counties—as it is of the "districts" I shall speak, I will briefly detail their respective limits, and appellations. The eastern district, commonly called

East Florida, extends from the Atlantic, westward, to the Suwanee River, and as far south as the parellel of 27° latitude. The middle district, known as Middle Florida, is comprised between the Suwanee and Apalachicola Rivers. The western district, or West Florida, from Apalachicola to the Perdido River—and the southern district includes the extremity of the peninsula below twenty-seven degrees, and the fortifications on Key West. The distinctions of arable soil to be found in the eastern section, are between the high hammocks or uplands, and the swamps or low bottoms. The former are chiefly composed of a gray vegetable mould, mixed with white sand, and based on beds of indurated or stone marl, in such abundance, that it rises in layers or shelves on the surface. This excess of lime I hold to be the destructive quality of these lands; for I conceive, that though marl in all its varieties is, under proper proportions, an auxiliary to soil, it is, when in excess, and solely uniting with silicious land, detrimental to production, and extremely injurious. Clay, or other absorbent, is essential for decomposing and imbibing the generic heat of calcareous matter; without it, lime, in excess, "consumes the meat it feeds on;" and by its continued thirst, creates the destructive effects of drought. The growth on these lands in the east, is indicative of this fact—being a stinted production of dwarf or scrub oak, and the steril palmetto. They are notwithstanding generally cultivated, and yield cotton productively for three or four years, or as long as the vegetable moisture exists; but at the expiration of that time, they become dry, glazed, volatile, and unprofitable. Corn cannot be grown profitably at any time; and sugar being of the same genus, is difficult of culture. The richness, however, of the bottoms or swamp lands in this section, more than compensates for any deficiency in the uplands. They extend variously from a half to three miles from the margin of the creeks and rivers, lying perfectly level, and covered with a dense growth of forest trees, interlaced with innumerable grape and other vines, and in some instances, breast high with luxuriant and never dying grass. They are purely alluvial, and formed solely on viscous soluble marl, by the gradual deposite of vegetable matter held in the overflowing waters. They would, of course, require ditching and drainage to be fit for cultivation, and this is most feasible: and once accomplished, would forever secure an inexhaustible and inestimable soil. The owners of these bottoms are fully aware of their value, but the want of labor, and the "thousand and one" difficulties to be executed on a new settlement, have compelled them to cultivate, as yet, almost entirely the more easily cleared uplands. Some have, however, succeeded in bringing the swamps into culture already, and the luxuriance of the sugar cane crop upon them, has more than justified their expectations—2000 lbs. and upwards, per acre, of muscovado sugar has been averaged from a thirty acre field. I may respectfully mention General Hernandez, (one of the few remaining Spanish grantees now amongst us,) who has with great perseverance and success, overcome the laborious difficulties of clearing and draining new land; and has now under culture, upwards of 200 acres of these swamp lands, constituting by far the most valuable plantation, as respects soil, in Florida, and equally as healthy as any other to his slaves. I may convey some idea of the comparative value of these redeemed marshes, in stating that a late appraisement made over Gen. Hernandez's estate for banking purposes, estimated his cleared swamp at $80 per acre, while similar appraisements elsewhere of the finest upland, has only reached $15 per acre. I express myself strongly respecting these swamp lands, on the conviction that they must ultimately become the chief sugar growing lands of these states. They lie immediately on the sea board, between latitude 29 degrees, and as far south as the surveys of the peninsula have gone. They have many advantages over the Mississippi bottom lands, as regards climate, health, and proximity to the northern markets, and nothing is wanting to exhibit their greater value, save capital and labor. Now that there is a probability almost reaching a certainty, that the supply of sugar will continue for some years less than the demand, it would be well for the capitalists of your state to turn their attention to its manufacture—and I speak from personal examination in saying that the swamp lands of East Florida, and especially those lying on the branches of the Matanza and Halifax Rivers, are superior in strength and character for the production of sugar, to the most valued lands of the West India Islands—only excepting the ashy loam of St. Kitts. The little success which has as yet attended the planters of the east on these swamps, is entirely owing to a misapplication both of money and labor: and must not be taken as an evidence at all of the land, except to show that had the lands been *bad*, under the same want of practical husbandry, the cultivators would ere this have become beggars.

Extensive tracts of land are yet in the market, comprising large proportions of these "bottoms;" though the late organization of an "Union Bank," with its issue upon landed security, has enhanced their value. The health of such low grounds beneath a tropical sun, cannot be justly eulogised, although with the exception of the "dog days," they may be denominated safe and agreeable residences; and during those trying days, St. Augustine, so justly famed as the Montpelier of America, affords a most fascinating retreat, with

Its sweet orange groves—and evergreen bowers—
And the atmosphere loaded with the breath of their flowers!

It has been, sir, a source of much regret, that limited means have compelled me to forego a settlement on these inexhaustible mines: but alas! like Shakspeare's apothecary, "My poverty but not my will consents." It has been a serious obstacle to the advancement of our sugar plantations that most of our planters have commenced them without adequate resources. It may be advantageous and desirable that a cotton farmer should not have too much wealth: the operations of his estate can be successfully executed without any expensive machinery, or large outlay of dead capital. Not so, however, with a sugar plantation—the salvation of its crop, and its profitable manufacture, are dependant, in *this climate* of variable and *limited* autumn, upon effective and sufficient machines—all of which cost much in material, in construction, and most in erection and application. Yet how few calculate this necessary and preparatory outlay! But of this, more anon. I must conclude this *essay* upon your time and space, lest besides its many faults, its length should add to

render it unworthy a "second reading." I trust that it may be acceptable: if so, I promise myself the pleasure of again writing for a future publication, and to continue these letters upon the other sections of Florida which I have visited, until, Mr. Editor, my observations, or *your* indulgence shall become exhausted.

FARQ. MACRAE.

[It would be a superfluous declaration on our part, that further communications from the writer above, will be acceptable and gratifying, but for his expression of doubt on that head. His continuation of this particular subject is requested as early as it can be furnished—and future communications on any other subjects, as the writer's leisure may permit.

We share with our correspondent the regret that more space in this journal has not been given to the agriculture of "the far south," and to the management and lands of the newly settled country. But the fault is not *ours*—and the acknowledged deficiency will soon be filled up, if only a few more of the intelligent cultivators of those regions, were, like our correspondent, sensible of the general want of such information, and would come forward and communicate their own respective acquisitions. Such communications would serve as seed to produce many others in due time—and the harvest of gain would be sufficiently abundant to reward all who aided in the labor, whether they commenced at the first or the "eleventh hour."

But while admitting the alleged deficiency of articles especially relating to the agriculture of the far south, and still more of newly settled lands, it may be justly claimed that we have paid far more attention to those regions than their cultivators have to our work, or to the promoting of their own interests by making proper use of it. Compared to the small amount of the subscriptions, and of the more valued written contributions to the Farmers' Register from the southern cultivators and pioneers, at least as much of its contents have been devoted to their peculiar interests, as to those of any other part of our country. It is to be hoped that more correct views are slowly extending—and that southern planters, both on old and new lands, will know that both their pecuniary and political interests, may be better sustained by aiding the hitherto weak, but zealous efforts of this journal.]

From the Richmond Compiler.

HYDRODYNAMIC RAILWAY, OR THE APPLICATION OF THE POWER OF RIVERS TO THE RAPID AND CHEAP TRANSPORTATION OF PRODUCE AND MERCHANDIZE.

It has long been with me a matter of doubt, whether the water used in the lockage of canals was not in many cases an injudicious application of a valuable power, as in the case of a canal located along the valley of a great river having considerable fall in its bed, like that of the river James, which has 1222 feet fall from the Covington to tide-water, or about 4.74 feet per mile, rendering at least one lock necessary for every two-miles in the average.

On investigating the subject, I find that the water power of the river is of itself equal to the transportation of a greater quantity of tonnage than can be passed through the largest canal, and this too with the astonishing rapidity peculiar to rail roads.

I will therefore lay before you, in as succinct a manner as possible, this new, though simple, deduction of science.

The locks of the Chesapeake and Ohio Canal are 100 feet long, 15 wide, and, say we take one of the most approved lift, 8 feet, the "prism of lift" will then contain 12,000 cubic feet of water, which will weigh 750,000 pounds. Every time the lock is emptied, this quantity is transferred from a superior to an inferior level. If the valves are opened simultaneously, I am informed that the lock can be filled and emptied in little more than two minutes; but say that it takes three. Now, this water is power, and if it were applied to a properly constructed "breast wheel," or where the fall of water is greater, to a "pitchback," we should have four-fifths of it available to set any machinery we think proper in motion. Let it be applied to an endless chain or rope, passing over suitable rollers along the line of a railway, after the manner of the stationary system of steam engines, we shall have a water power railway, entirely free from the objections that can fairly be urged to the stationary steam engines, of the necessity of keeping up the fire and steam, &c.

When the stations are two and a half miles apart, one-twentieth of the power, according to Tredgold, will be expended in moving the chains; but I will allow a tenth of the power to effect this object on two mile stations, the chain being worked but for one mile.

We have then the four-fifths of 750,000 pounds, (the one-fifth being lost in the application to the water wheels) equal, 600,000 pounds, which, falling 8 feet in three minutes, is equal to 1818 pounds moved half a mile in the same time; which is at the rate of 10 miles an hour. Deducting from this the one-tenth, as that part lost in moving the chain, leaves 1637 pounds. And as 10 pounds are equal to the transportation of a ton, with the commonest railway wagons, it follows that the above power is equal to the transportation of 163.7 tons over half a mile of the road, while a boat would be passing through the lock of the canal; or it will transport 81.8 tons over a mile of the road in the same time, which is at the rate of twenty miles an hour!

But the maximum rate of transportation on canals is $2\frac{1}{2}$ miles an hour, and as the mass moved is inversely to the velocity, we shall at this rate be able to transport 654 tons.

The water used would be at the rate of 66.6 feet per second. James River, even at Covington, in a dry season, yielded nearly three times this quantity, as appears from the Report* of Mr. Crozet, who measured Jackson's River and Dunlop's Creek in August and September, 1826. The mean of the results obtained by this engineer is 177.6 cubic feet per second, or 10,656 feet per minute; and we have this quantity with 7.11 feet fall per mile, the average down to Pattonsburg; before reaching which, however, the volume of water is more than double; and as we descend the river,

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* 5 Vol. Board of Public Works, page 108.

although we have less fall per mile, we have at least six times the quantity of water to compensate for it; and the fall is still about 3½ feet per mile.

The heavier trade being descending, will add to the effect of this power; but disregarding this favorable circumstance omitting the decimals in the fall per mile, and taking the minimum quantity, we have 10,656 cubic feet of water equal in weight to 666,000 pounds, which if permitted, will of course fall the 7 feet in a minute, and is therefore equal to 4,662,000 pounds falling one foot. Deducting one-fifth for loss in application, leaves 3,729,600 pounds. Now the load we can transport will depend on the velocity at which we would travel—say that it shall be 10 miles an hour, which is 880 feet per minute.

Dividing 3,729,600 by 880, the quotient is 4,238 pounds, moving with the velocity of 10 miles an hour!

From 4,238 deduct the one-tenth part, for that lost on mile stations, in moving the chain, or rope; and dividing the remainder by 10 for the friction per ton of the carriages, and we have 381.5 tons transported at the rapid rate of 10 miles an hour!

And as each and every mile furnishes its own moving power, it follows that it is equivalent to keeping this quantity in motion on each mile throughout the line at the same time. And as the distance from Richmond to Covington is 257½ miles, this may amount to the enormous quantity of 98,236 tons; or to the transit and delivery of 3,815 tons hourly!

Having thus demonstrated the amplitude of this moving power, to an extent probably far beyond any demand we shall be able to make on it—which will be better understood by the general reader from the fact, that but 17 hours would be equal to the transportation of a greater quantity of tonnage than passed over the whole Baltimore and Ohio Rail Road in a year ending 30th September, 1833—it now remains to show that it can be employed at a reasonable expense.

The expense of erecting works for hydrodynamic transportation will depend on their scale, or magnitude, and on the greater or less permanent character of the materials used in their construction; also, on the extent to which we would employ the motive power. With regard to the latter, however, it should be observed, that we obtain it so cheaply, and in such excess, as to obviate, to a great extent, the necessity of expensive grading. This adaptation of fixed power to an undulating surface, of any degree of slope renders it peculiarly applicable to mountain localities, as by its means we can cross the bends of the river, thus shortening the distance, while a canal, or even an ordinary rail road for locomotives, should be conducted round them.

Another important advantage derived from the employment of this cheap power, is that we can substitute, for the iron rail, a broad granite tramway similar to that extending from London to the West India Docks; which, although it will cost more per mile in the first instance, yet it will have great permanency to compensate for this. But the most important advantage to be derived from the granite tramway, is, that any man may bring his own farm wagon, and, leaving his horses behind him be drawn to market at a rate of 10 or 20 miles an hour, which would be in less time than would be spent in passing the locks of a canal: thus freeing the work entirely from the odious charge of monopoly brought against rail roads.

To form an estimate of the cost, it will be necessary to suppose the works adapted to some definite amount of trade. Say that it shall be to the delivery of 100 tons per hour, or to the transportation of 50 tons at a time, at the rate of 10 miles an hour.

For this purpose I will suppose it necessary to erect a dam at every four miles; and that they may be built in the most substantial manner of stone masonry, I will estimate them at $10,000 each; the average width of the river up to the Blue Ridge is 699 feet; above the Ridge, it will only be 275 feet. For water wheels of the best and most durable construction, say $3000.

Thus we have 13,000, which, divided by 4 miles, gives $3250 per mile, as the cost of the moving power.

Estimate of the Expense.

Motive power, or proportional cost of dams per mile, - - -	$3,250
Ropes, a double line per mile, -	1,800
Rope rollers, put up, - -	850
*A broad granite, or marble tramway, double track, - - -	8,000
Grading and bridging per mile, say,	2,000
	$15,900
Add 10 per ct. for superintendence,	1,590
	$17,490

High and unfavorable as the above estimate is, yet the whole cost of the moving power, including dams, water wheels, ropes, and rollers, will be much less per mile than such locks as those of the Chesapeake and Ohio Canal, which cost, as I am credibly informed, $1500 the foot lift.

I have estimated for ropes, as they are in more general use than chains; and the above will be the cost of the newly invented rope, saturated with India rubber, expressly for this purpose; which is said to increase its strength as well as its durability.

When the stations or water wheels are placed 4 miles apart, each wheel would have to work 2 miles of the road at a time; but did the trade require it, double, or probably treble the foregoing tonnage could be delivered by erecting an additional water wheel at each station.

The following is the estimate of the amount of power to work the 4 mile stations, which those conversant with the subject will perceive to be very ample.

Friction and resistance of two miles of rope, - - - -	600 lbs.
Ordinary friction of 50 tons of carriages and goods, 10 lbs. - - -	500 do.
Allowance for occasional gravity, at 20 lbs. per ton, - - -	1000 do.
Power allowed at the rate of ten miles an hour. - - - -	2100

* Wood and iron rail tracks, like those on the Petersburg Rail Road, could be laid in a double track for 6000 dollars a mile. They would last much longer than when locomotives are used.

2100 pounds moved 880 feet in a minute, is equal to 1,848,000 pounds moved one foot; which is equal to 154,000 pounds falling 12 feet in the same time, which is, also, equal in weight to 2464 cubic feet of water. To which add one-fourth, for loss in application, and we have 3080 feet per minute, or rather more than 51 feet per second.

For the sake of conveying an idea of the probable cost on a large scale, I have supposed isolated dams to be used at regular distances, but the engineer will of course adapt his works to suit particular localities, sometimes preferring a continuous canal, substituting water-wheels in place of locks, and thus discharging the water, as it is used, into the next consecutive reach below. Or where great length of level occurs, the wheels may be made to discharge their water into the river, to be again taken out of the next dam.

On canals already constructed, where they have considerable lockage, and plenty of water, it is obvious that the trackage may be effected by the foregoing means; that is, by erecting a water-wheel along side of a lock, and extending a chain down the margin of the canal on the one side, which would be returned up the other.

And as they no longer need the tow-path, they may lay a light rail track, on which passenger cars may be drawn by the same power at any required velocity.

But in many cases, where thay have not a superfluity of water, they had better substitute water wheels for their lock gates, widen their tow-path, and lay down a railway.

In conclusion, I invite investigation by men of science, as it is certainly a subject of great importance to the country, now so extensive engaged in works of internal improvement.

JAS. HERRON,
Civil Engineer.

Richmond, Va., May 26, 1835.

SPAYED COWS.

[While the foregoing sheet containing the French article on this subject was printing off, we discovered that the piece therein referred to was in one of the volumes of our library. It is here given entire. The piece stands in the American Farmer of 1831, as copied from the New England Farmer, probably of a date not much earlier, but not stated. If this piece had not escaped our memory its being presented would have rendered unnecessary the remarks in a proceeding part of this No.]

From the New England Farmer.

Mr. Fessenden.—Some years since, I passed a summer at Natchez and put up at the Hotel then kept by Mr. Thomas Winn. During the time that I was there, I noticed two remarkably fine cows, which were kept constantly in the stable, the servant who had charge of the horses, feeding them regularly, three times a day, with *green Guinea grass* cut with a sickle.

These cows had so often attracked my attention, on account of the great beauty of their form and deep red color, the large size of their bags and the high condition in which they were kept, that I was at length induced to ask Mr. Winn, to what breed of cattle they belonged, and his reason for keeping them constantly in the stable, in preference to allowing them to run in the pasture, where they could enjoy the benefit of air and exercise, and at the same time crop their own food and thereby save the labor and trouble of feeding them? Mr. Winn in reply to these inquiries, stated, that the two cows which I so much admired, were of the common stock of the country, and he believed of *Spanish origin*—but that they were *both spayed cows* and that they had given milk, either two or three years. Considering this a phenomenon (if not in nature, at least in art,) I made further inquiries of Mr. Winn, who politely entered into a very interesting detail, communicating facts, which were as extraordinary, as they were novel to me, and supposing that they will prove equally as interesting to your numerous agricultural readers, as they were to me, I am induced, on the request of a friend, to offer them for publication in your very valuable journal, in the hope, that some of the farmers who supply our large towns with milk, will deem them of sufficient importance, to make experiments for the purpose of ascertaining whether the results which they may obtain, will corroborate the facts stated by Mr. Winn, and which, should they be fully confirmed, may lead to great and important benefits, not only to farmers, but to tavern-keepers and other inhabitants of cities, and villages who now keep cows, in order that they may be sure of a constant supply of *pure* and *unadulterated* milk.

Mr. Winn, by way of preface, observed, that he had in former years been in the habit of reading the English Magazines which contained accounts of the ploughing matches which were annually held in some of the southern counties of England, performed by cattle, and that he had noticed that the prizes were generally adjudged to the ploughmen, who worked with *spayed heifers*—and although there was no connexion between that subject and the facts which he should state, it was nevertheless the cause which first directed his mind into that train of thought and reasoning, which finally induced him to make the experiments which resulted in the discovery of the facts which he detailed, and which I will narrate as accurately as my memory will enable me to do it, after the lapse of more than twenty years.

Mr. Winn's frequent reflections, had (he said) led him to believe—"that if cows were spayed soon after calving and while in a full flow of milk, they would continue to give milk for many years, without intermission or any diminution of quantity, except what would be caused by a change from green to dry or less succulent food."

To test this hypothesis, Mr. Winn caused a very good cow, then in full milk, to be spayed; the operation was performed about one month after the cow had produced her third calf; it was not attended with any severe pain or much or long continued fever; the cow was apparently well in a few days and very soon yielded her usual quantity of milk and continued to give milk freely, for several years, without any intermission, or any diminution in quantity, except when the feed was scarce and dry—but a full flow of milk, always returned, upon the return of a full supply of green food. This cow ran in the Mississippi low grounds or swamp, near to Natchez, got cast in deep mire and was found dead. Upon her death, Mr. Winn caused a second cow to be spayed, the operation

was entirely successful, the cow gave milk constantly for several years—but in jumping a fence, stuck a stake in her bag, that inflicted a severe wound, which obliged Mr. Winn to kill her. Upon this second loss, Mr. Winn had two other cows spayed, and to prevent the recurrence of injuries from similar causes with those which had occasioned him the loss of the two first spayed cows, he resolved to keep them always in the stable, or some safe enclosure and to supply them regularly with green food, which that climate, throughout the greater part, if not all the year, enabled him to procure.

The result in regard to the two last spayed cows, was, as in the case of the two first, entirely satisfactory, and fully established, as Mr. Winn believed, the fact, that the spaying of cows, while in full milk, will cause them to continue to give milk during the residue of their lives, or until prevented by old age.

When I saw the two last spayed cows, it was I believe, during the third year that they had constantly given milk, after they were spayed.

The character of Mr. Winn, (now deceased) was highly respectable, and the most entire confidence could be reposed in the fidelity of his statements, and as regarded the facts which he communicated in relation to the several cows which he had spayed, numerous persons with whom I became acquainted, fully confirmed his statements.

At the time to which I allude, I endeavored to persuade Mr. Winn to communicate the foregoing facts to the late Judge Peters, then president of the Agricultural Society of Pennsylvania. But he was restrained from complying with my request by an extreme unwillingness to appear before the public, and peradventure, his discovery might prove not to be new, as doubts in regard to the facts, might, where he was unknown, subject him to some degree of ridicule.

The many and great advantages that would result to the community, from the possession of a stock of cows, that would be constant milkers, are too obvious, to require an enumeration.

Should gentlemen be induced from this communication, to make experiments, they will find it better to spay cows which have had several calves, rather than heifers, as at that age their bags are usually large and well formed, and are capable of carrying a much greater quantity of milk (without pain and inconvenience,) than younger animals.

VIATOR.

From the Richmond Enquirer.

PROCEEDINGS OF THE DIRECTORS OF THE JAMES RIVER AND KANAWHA COMPANY.

The Board of Directors re-assembled in this city on the 17th inst: Present—Joseph C. Cabell, President, John H. Cocke, Sidney S. Baxter, Randolph Harrison, Samuel Marx, and Richard Sampson. The Board continued its session for two days; and after rescinding the previous order for a meeting on the 24th inst., adjourned to the 17th of July. A variety of business was transacted at the last meeting; but the attention of the Board is understood to have been chiefly engaged in organizing the Corps of Engineers. That organization was effected, so far as it was required to prepare the First Division of the Canal for immediate execution; and it was framed upon consultation with Judge Wright, of New York, who was in attendance by invitation of the President, under authority given at the previous meeting of the Board. The Corps of Engineers will consist, for the present, of an engineer in chief, three assistant engineers, three surveyors, six rodmen, and six chain-carriers. It will be divided into three divisions, each consisting of one assistant, one surveyor, two rodmen, and two chain-carriers. The line of canal from Lynchburg to Maiden's Adventure, will be divided into three sections: one extending from Lynchburg to Tye River, another from Tye River to Scottsville, and another from Scottsville to Maiden's Adventure. A division of the corps, will be assigned to each section of the line, and they will commence their action about the same time, and as soon as practicable, and locate downward. Each assistant engineer will have authority to employ two axemen, and each division will be attended by a covered boat, conducted by a boatman, who will act also as cook to the party: and will also be furnished with a cooking apparatus, and with tents, for the purpose of encamping at night upon the hills, and beyond the reach of the dews and the fogs of the river. The residue of the furniture of the boat, as well as their provisions and instruments, will be furnished by the members of the division, whose compensation is regulated with a view to that object. The boat attached to each division will slowly descend the stream, keeping abreast of the party as the location proceeds, so as always to be within convenient distance of the division.

Benjamin Wright of New York, is appointed engineer in chief; and although he reserves his final acceptance or non-acceptance till after his return to New York, there are the best grounds for the belief that he will accept the appointment. This distinguished engineer, whose services are so extensively sought for, was already under extensive engagements, leaving him about one-third of his time for the residue of the current year, and two-thirds in future years. The latter proposition, it is hoped, may be reduced to three-fourths, by a compromise with the companies to which he stands engaged. The periods of his absence in future years will be selected with reference to the convenience and interests of our work, and upon consultation with the president of the company. His salary for the residue of the present year, will be at the rate of $3000 per annum. For future years, it will be at the rate of $5,500 or $6,000 per annum, just as he may spend 8, or 9 months per annum in the service of the company. This rate of compensation may appear to be high to those at a distance from the great lines of improvement, but will be deemed very reasonable and moderate, to those acquainted with the high profits of the profession, and the vast importance of professional skill, in works involving the expenditure of millions. The most eminent engineers in the United States are in the receipt of from $10,000 to $15,000 per annum, for the various lines under their care, and in the habit of receiving $5,000 for laying out, and making an occasional visit to a single line. In the selection of his *three first and principal assistants*, and in the adjustment of the amount of their salaries, Judge Wright is understood to have expressed a particular wish to be consulted, in which he was gratified by the

president and directors. This proceeded from the very great importance to himself and to the Company, that he should be aided by tried and skilful assistants, upon whom he could implicitly depend in the location of the canal.

Charles Ellet, Daniel Livermore, and Simon W. Wright, were elected assistant engineers, each with a salary of $2,000 per annum. It is understood that these engineers are of many years' experience in the line of location, and that these are the rates of compensation which some, if not all of them, are now receiving elsewhere, and the least for which their services could be procured.

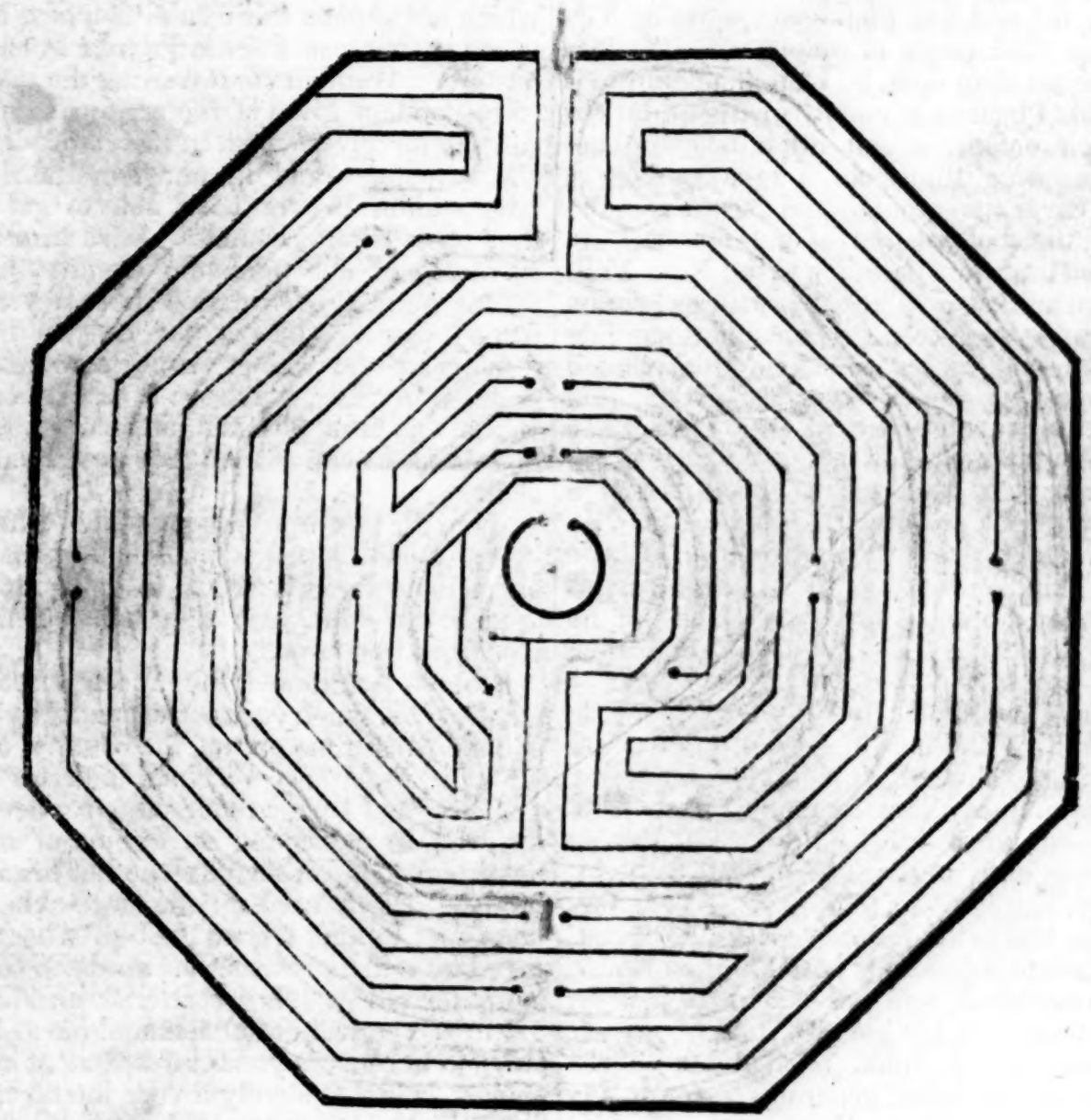
The surveyors, rodmen, and chain-carriers, will be appointed by the president, in conjunction with the assistant engineers. It is understood that those appointments will be speedily and advantageously filled, from a list of numerous applicants from within the limits of the state, who are well educated and seek to enter the profession of engineering with a view to future distinction, as well as the means of subsistence.

It is hoped that the whole corps will be organized and equipped for the field by the 15th July, and that the three divisions will be in motion by the 20th of the month.

For the Farmers' Register.

PLAN OF A LABYRINTH, FOR A PLEASURE GARDEN.

The plan below, will probably be found to accord with the object in view more completely than would be supposed possible from employing so few lines, and in so small a space as this might be constructed on. The difficulty here designed, (like that of the labyrinth within which tradition tells that Fair Rosamond was concealed,) is to find the way *in*—and not *out*, as was the difficulty in the Cretan labyrinth. Indeed, one part of the purpose and effect of this is to bring the seeker frequently outside of the entrance, when he supposes he is making fast progress towards the centre. If on this plan a labyrinth was constructed by walls or paling, with passages of sufficient width, it would not cover a quarter of an acre: and if constructed in a public pleasure garden, of a city, would serve to furnish as much amusement to visiters, and profit to the proprietor, as could be obtained at no greater cost.



COMPARATIVE VIEW OF THE AGRICULTURE OF VIRGINIA AND THE NORTHERN STATES.

To the Editor of the Farmers' Register.

* * * * * * *

When I began this letter I did not think of writing on any other matter than the one I have mentioned, but while I have my pen in hand I will add, that though I highly approve the general conduct of your publication, and find a remarkable coincidence in our opinions on agriculture, I occasionally meet with some very fanciful, and, as I think, some very erroneous opinions among your correspondents. This I know cannot be avoided in such a work, and perhaps if it could, it ought not to be: as arguments on different sides of a question often aid in coming to a right conclusion. But I think that a greater number of your correspondents than I could wish, seem disposed to compare our agriculture with that of the northern states, much more unfavorably than is warranted by facts. In page 739, Vol. II, I find a very neat and well written article by a correspondent, on the agriculture of Rhode Island. A few years since I spent a part of the hot season in that delightful spot, and do not wonder that he is so much enamored with it. The scenery is beautiful; and the morning fogs, and cool and moist breezes from the ocean cover their meadows and pastures with verdure; but I did not think their agriculture superior, nor indeed, by any means equal, to that of the generality of fertile and well managed estates in Virginia. That their crops of onions and potatoes are much better than ours, is, I think unquestionable; and this I believe is mainly owing to the climate. Their onions, which are a field crop, are sown in the spring, throw out a great number of offsets that cover the ground, and do not come to maturity till the cool weather of autumn sets in: they will then bear transportation to the New York and southern markets. The onion with us is of no value but as a garden crop. It must be sown late in the season, and the button onions transplanted in the spring; they make very few offsets, and come to maturity in the heat of summer. They must then be gathered, and being subject to rot at that season, it is with much difficulty that a small supply can be preserved for family use. As to potatoes, which are a valuable crop in Rhode Island, and shipped from thence in large quantities to different markets, I think they are of no value with us except for the table, and then chiefly for use in summer, and a little later.—In the autumn and winter they are very inferior to those we get from the north. This difference I think, is owing to climate. If planted in the spring they come to maturity, like the onions, in the heat of summer—are preserved with difficulty, and are besides, except early in the season, of a very inferior quality, hardly fit for table use. At our Virginia springs, and in the recesses of the Allegany, I think the potato is decidedly better than in Rhode Island or Connecticut, and only inferior—if it be inferior—to those that are brought from Liverpool. This difference too, I think, attributable to climate—the summers being generally cooler in our Allegany country than in those parts of New England.

As some time has passed since I was in Rhode Island, I hope their agriculture has since improved—there was certainly much room for it, and I cannot otherwise account for the very favorable view your intelligent correspondent has taken of it. The pastures, (which were well stocked with sheep as well as horned cattle,) and their meadows were, I think, pretty free from annual weeds, as lands that have been long in grass generally are; but both appeared to me to be in a rather slovenly condition, with a good deal of "rubbish, briers, bushes, &c." in spots. Their ploughing I thought decidedly inferior to ours; nor did I wonder at it—their ground being much encumbered with stones, and their ploughs drawn sluggishly and heavily by oxen. With regard to their crops of corn, I agree with your correspondent in thinking them very good; but they did not appear to me to be in as clean order as ours generally are on our best, or even on our inferior lands. This perhaps was owing to the moisture of the climate favoring the growth of weeds. I observed the hills of earth round the corn which he mentions, a fashion which formerly prevailed in this country, and has long since been changed, I believe with good reason—and supposed it might probably be a good practice on lands unsheltered by woods, and exposed to tempestuous winds from the ocean. I can easily believe that the crops occasionally amounted to ten barrels the acre, and think it not more than ought to be made on lands originally strong and manured "*ad libitum*" as well by the marine weeds your correspondent mentions, as by the large stocks of cattle, sheep and hogs which are kept on the island, of which it appeared to me that at least five-sixths were in meadow and pasture. Without controverting the account your correspondent gives of the produce to the acre, I can say for myself, that in travelling through the northern states, and in our mountain country, I have seldom if ever been able to get any other than conjectural accounts. Ask a farmer in Pennsylvania or our mountain country, how much wheat he made for market the last year, and he will tell you to a bushel, for he has his miller's receipts for the whole: but his corn being got out at different times, as leisure from the other business of his farm admitted, and not being regularly measured, he can seldom give any certain account of it.

As to the rare-ripe corn planted in Rhode Island, it is no doubt suited to that climate, as our good old fashioned gourd seed is to ours. If we were to plant their sort, and they ours, I think both would fail in a crop.

I take it for granted the implement for raking stubbles, of which your correspondent gives a cut, is unknown in his part of the country, and probably in other parts of Virginia; and he has acted properly, and I hope rendered a service to those districts, in publishing an account of it. In my neighborhood, just such an one has been long and pretty generally used on the large wheat plantations, and I think a good deal of wheat may be saved by it if the season has not been so wet as to injure the wheat lying scattered on the ground.

I trust you will not understand me as being disposed to to censure your correspondent in any particular. He is evidently a very intelligent person, and I doubt not, writes with perfect candor. Indeed I should not have thought of mentioning to you any difference between his opinions and mine, if mine had not been different from those of many of your correspondents in regard to the superiority

of the agriculture of the northern states over ours. I have more than once gone over the usual track of travellers in New England, New York, (except its rich western country,) Jersey, and Pennsylvania, and have long been of opinion (perhaps erroneously) that except from the farmers, generally Dutch, on the rich lands of Pennsylvania, we have little to learn at the north in the management of our usual crops. I have seen a great deal of as good ploughing in Virginia as I have ever seen at the north, and I think we can fairly compete with them in the whole management of our grain crops. Still I freely admit that with us there is great room for improvement.

It would give me great satisfaction to be able to hold the opinion of numbers of your correspondents, that the soil of our middle and lower country was originally, in general, a fertile one, and that it is steril only through bad management. That there were, and now are, in both these districts, considerable tracts of rich land, I freely admit, and I wish I could persuade myself that this is the general character of our soil: but I have long thought that the very indifferent crops that we raised on a great portion of our lands are so, as much or more, from the land being infertile, or from bad cultivation. As a great part of the country is still covered by its native woods, it seems to me unquestionable that these lands are generally in the same state with regard to fertility, that they were at the first settlement of our country, and any person at all capable of judging, would, from the growth of wood on them, at once pronounce them to be naturally infertile; and if, not regarding these indications, he should examine the soil and find it thin, light, and sandy, or a stiff pipe clay, or gravel, and on investigating the sub-soil in ravines and gulleys, he should find it sandy, gravelly, or resting on sandstone or granite, he would come to the same conclusion. There are, however, some circumstances in favor of this, comparatively, unproductive soil. It generally lies well, is free from stone, and is easily cultivated. I may very probably be mistaken, but I have long thought that our climate is a very favorable one to grain crops, especially Indian corn, which is so valuable, and so productive.

With these views I am far from despairing of the improvement of the soil of lower and middle Virginia. Our rich alluvial soils, though they do not form a large proportion of the whole, are of considerable extent. So far as I am acquainted with them, they are generally well ploughed, and the crops well managed. The greatest fault in the husbandry of these lands, as I think, is the perpetual recurrence of exhausting crops, and in most instances, (though there are numerous exceptions,) a want of due attention to the collection and application of manures. A great proportion too of our higher and less fertile lands I think are capable of great improvement. The inexhaustible beds of the richest shell marl which have been already found in almost every part of our lower country, and which I am persuaded are but a small proportion of those that actually exist, with the aid of animal and vegetable manures, will by degrees fertilize this district; and I hope you will see the day when this improvement, to which you have so largely contributed, is extended through the greater part of it.

Our middle country, notwithstanding some slight indications to the contrary recorded in your Register, I fear is generally destitute of marl. This range of country commonly rests on granite or other rock that I believe geologists denominate primitive, and I understand that marls do not belong to this formation. I believe that limestone has not been found in this district, except a small stratum that runs through the country about twenty-five miles from the Blue Ridge, and nearly in the same direction. However, the soil of the middle country being generally stiffer than that of the lower country, is better suited to clover, and much may be done toward the improvement of this region by crops of clover, aided by gypsum, with animal and vegetable manures. A practice (whether a new one or not, I cannot say,) is now gaining ground in a part of it, probably not elsewhere, of top-dressing wheat, as well after, as at the time of seeding, with the farm-pen and stable manure; and I am assured that clover seeded on it in the spring, even upon thin land, seldom fails to turn out a heavy crop. Still whatever plan of improving on our less fertile lands is adopted, I am fully persuaded that a rapid succession of exhausting crops will soon return them to their original state, or reduce them still lower, unless they are kept up by liberal supplies of manure.

Having already advanced the opinion that our agriculture, so far as it relates to the management of our usual crops, will bear a comparison with that of the northern states in general, I ought perhaps to advert to one point of comparison in which the agriculture of the New England states, a great part of the other northern states, and of our mountain country, has the advantage of ours in the middle and lower country. The climate of those regions being cooler and more favorable to the growth of herbage than ours, and a great proportion of their soil being very hilly, or encumbered with stones, it is less suited to the plough. It is a natural and almost necessary consequence, that pastures and meadows should occupy a much larger portion of their land than of ours—that they should have much larger stocks of cattle—and a much smaller proportion of their soil being under the plough, they are able to manure it much more heavily than we can possibly do. In New England, we seldom see a field of corn that is not highly manured: our very extensive fields get little, and much the larger part no manure at all. Their crops, of course, ought to be much heavier than ours. This difference then, between their system of agriculture and ours, seems to be mainly owing to natural causes, that are, in a great measure, beyond our control. Both our climate and soil being better suited to the plough than to pasture, our course of husbandry is, I am afraid, necessarily an exhausting one; and though we may countervail this tendency in some degree, I have never heard of any system of management, that in my opinion, seemed likely to do it effectually. The plan that is most generally approved, is to keep the arable lands that are at rest, free from the tooth and hoof of stock; and as all our cleared lands are arable, to have as small a number of sheep and cattle as possible—and that small number is generally deemed injurious to the soil. I am persuaded that our arable lands, during the short periods of rest that are allowed them, will be better able to bear a new succession of scourging crops if the natural grasses with which they clothe themselves,

or the clover that is sown on them, are suffered to grow and decay without being fed off. But I believe none but our most fertile lands can be improved, or even kept in heart, by this course of husbandry, and that the less productive lands can only be improved under such management by manuring: and how is manure to be obtained without stocks of cattle? It may be urged that straw, corn-stalks, leaves, &c. will furnish as large a supply of manure, if spread on the ground, without having been used as litter or food for cattle. This is contrary to general opinion in England, and the other well cultivated countries in Europe; and I think it will be admitted, that vegetable substances are more speedily brought into a fit condition for manures, by being trampled and fed on by cattle, than if left to natural decay. It seems equally clear, that animal manures are much stronger than vegetable. Inclining as I do to these opinions, I am disposed to think, that in avoiding, as far as is practicable, the pasturage of cattle on arable lands that are under cultivation, during the short periods that they are at rest, it would be a good practice to lay off a part of the cleared land of a plantation for a standing pasture, selecting generally that portion that is least suited for grain crops, and to keep on it as large a stock of cattle as it will maintain during the season of pasturage, and as can be provided with forage from the plantation for the rest of the year. It is hardly necessary to add, that while the horses and mules are well littered, and well fed in stables, the cattle ought to be treated in the same way, in well sheltered pens, either permanent or moveable, as is thought most convenient, but so situated that the liquid manure cannot run off and be lost.

With regard to the proportion of a plantation to be laid off for a standing pasture, each case must depend on its own circumstances; but I would not venture to recommend as a general practice, any great or sudden change, that would very much reduce the annual vendible products of the plantation. Though the ultimate object of agriculture, like all other pursuits of industry, is profit, which comprehends the improvement, and of course the increase in value of our land, most of us rely on the annual products for our support.

If this were written for publication, and should be inserted in your Register, I have little doubt that I should subject myself to the imputation of preaching heretical doctrines, in recommending an increased stock of cattle, and the high and most respectable authority of Col. Taylor would be quoted against me. Perhaps in defending myself, I might rely on the ancient adage "*Amicus Plato, &c.*;" but I think there would be no occasion for it. In the main, I agree with him, that arable land, when at rest in the course of crops, should not be pastured closely, if at all, and only recommend, under circumstances, such a stock of cattle to be kept in standing pasture, as will be nearly, or quite sufficient to consume the herbage of the plantation, and improve the quality, as well as increase the quantity of manure.

In the application of manures, I think some of our good farmers, in other respects, have much to learn. I have seen the bulk of the manure, on well cultivated plantations, applied liberally to galls, to remove an "eye sore," and to the thinnest soil of a field, to bring it on an equality with the more fertile part; though that too wanted manure to raise it to the proper standard of fertility.

It is a very general opinion, in which I heartily concur, that wheat husbandry cannot be conducted to advantage, unless clover is grown as a preparation for wheat, and a heavy crop of wheat can hardly be expected; except on rich land, unless it is preceded by a good crop of clover. But a small proportion of our land is strong enough to bring good crops of clover without the aid of manure, and I think it would be much better management, when there is not manure enough for a whole field to be seeded with wheat followed by clover, to apply it in sufficient quantities to a part of the field, and that not the worst, than to give a very light dressing to the whole field, which would only give a light scattering crop of clover. In the former case, a part of the land is at once brought to the proper point of fertility, and the residue in its turn may be treated in the same way. Whether the bulk of the manure should be applied to the corn crop preceding wheat, spread before the wheat furrow, or applied as a top dressing to the wheat, the manure will produce its effect in either way; but from what I have seen and heard, I am satisfied that a top dressing, at or after the time of sowing wheat, will insure a good crop of clover on lands that otherwise would not bring enough to deserve the name of a crop.

In different accounts that I have seen of Scotch husbandry, it is stated that the arable lands in that country having been generally much exhausted, a system of husbandry called, I think, the "in and out-field," was introduced. The in-field lots next the farm buildings, were heavily manured, and thrown into a separate rotation of crops. The out-field lands were occasionally cultivated for such crops as they could get with little or no manure. By degrees, with the aid of heavy crops of clover and increased quantities of manure, the farmers were enabled to extend their in-field lands, and now a great part of the arable lands in the low lands of Scotland are cultivated on the in-field system. A practice like this, I am told, has been followed in some parts of the northern states, and with like success. I understand too, that some of our most successful tobacco planters have laid off lots which they cultivate in a rotation of clover, wheat and tobacco, to great advantage.

I observe that for some time past, a controversy has been going on in your Register, with regard to the proper rotation of crops. This is one of those subjects on which "much may be said on both sides," and very judicious observations have been made by the advocates of opposite opinions. It must be admitted, that this is a subject of importance to our husbandry, but whether the three, four, or five-shift system is followed, there may be very bad or very good management with either rotation. On those plantations where wheat is a principal crop, if good crops of clover can be obtained, and a plentiful supply of manure furnished, good crops can be made on either system; though according to circumstances, one system may be preferable to another. Our kitchen gardens are constantly cultivated in a succession of crops, all more or less exhausting; but with sufficient supplies of manure, their fertility is kept up —without them, the soil would soon be worn out.

I cannot conclude this long letter, already by far too heavy a tax on your patience, without again

adverting to the letter of your correspondent on the husbandry of Rhode Island. He says, "*I should think that one Rhode Island laborer would perform as much as two and a half southern slaves.*" Now there is nothing peculiar in this remark, as similar opinions with regard to the northern white laborers and our slaves, have been advanced in your Register, and so far as my memory serves me, without much, if any thing, being said on the opposite side of the question. I have often heard such opinions advanced in conversation, by highly respectable and intelligent persons. I think I have had sufficient opportunities of comparing these two very different classes of laborers, and right or wrong, though certainly meaning to be right, have long been of opinion, that man to man, our slaves perform as much or more labor, and perform it as well or better, than the laborers at the north, or at least beyond Pennsylvania. Without going into long details, let us look at general results. In the Blue Book (as it is called) for 1834, App. p. 34, is an account of the domestic exports of the United States, for the year 1832.

The agricultural exports are—

Product of animals,	$3,179,522	
Vegetable food,	352,494	
		$11,532,016
Tobacco, - - -		5,999,769
Cotton, - -		31,724,682
All other agricultural products,		159,716
		$49,416,183

Thus we see that cotton, a product obtained wholly by the labor of slaves, was in 1832 largely over two-thirds of the whole agricultural exports of the United States; since that time the ratio has greatly increased. Add to this the tobacco, of which I am persuaded more than nine-tenths are produced by slave labor, and the vegetable food of which I think you will agree more than one-half consists of the wheat, Indian corn, and rice, raised by the labor of slaves. After this simple state of undoubted facts, can any judicious well informed person doubt that slave labor in agriculture is more efficient and productive in the southern states, than free labor directed to the same object at the north? Will it be said that the domestic consumption of the produce of our lands is greater than the export? Without denying this as a fact, I would ask what proportion of the bread stuffs, the rice, the sugar, and molasses consumed by the people of the New England and other northern states, to say nothing of tobacco, is the produce of slave labor at the south?

I may be mistaken, but it has long been my settled opinion, founded on full, and I hope impartial consideration, that there are few countries where agricultural labor, by the same number of hands, obtains as large and valuable products as the slave labor of the southern states.

This is not written, I assure you, in the spirit of controversy, but I hope from a better motive. It is right and proper that we should be stimulated to improvement in our agriculture, and there is too much room for it: but why should we so often be presented with so gloomy a picture of our husbandry, as compared with that of the northern states? It would not perhaps be too strong to say, as Mr. Jefferson said on a different occasion, "in this I neither recognise the portrait of ourselves, nor the pencil of a friend."

You will not understand me, I hope, as meaning to cast any censure on the northern husbandry. The farmers of New England, and the other northern states, whose management I have had an opportunity of observing, appear to me to be a class of men that would do honor to any country —steady, active and intelligent, their farm buildings, their implements, their working cattle and other stock, are generally in good order, and well attended to, and among them there are instances of farms well cultivated throughout, especially in the fertile valley of Connecticut River. But their husbandry in general did not seem to me to deserve this character. This I was satisfied, on inquiry and consideration, was owing to a course beyond their control. The scarcity, or in other words, the dearness of labor—a large proportion of their hands being employed in navigation and manufactures at high wages, farm laborers would of course require more for their services; and such neat husbandry as is practised in fertile and well cultivated lands in Europe, would cost more than its worth. They seemed to me, in passing through their country, to be careful, rather than laborious. The leisure of the shepherd and herdsman, and the toils of the plough and sickle, have always been a subject of remark, and a fruitful theme of poetry, ancient and modern.

For the Farmers' Register.

MONTHLY COMMERCIAL REPORT.

Agricultural produce generally continues to command high prices. A state of peace throughout the world has doubtless tended to increase the consumption of nearly all commodities, whether of luxury or necessity. The facility of intercourse between all countries opens new markets, and furnishes a greater variety of articles of commerce adapted to our wants, improvements, or inventions. For example, the increased use of iron for rail roads and other purposes is beyond computation—and to what various uses is ingenuity applying the formerly insignificant article, caoutchouc or India rubber!

The amount of domestic exports from the United States will be greater this year than in any former one. The value of cotton alone, at the high prices of this crop, will exhibit an amount nearly equal to the usual aggregate of all domestic articles exported. Although the quantity of cotton produced last year was full 50,000 bales more than in any former one, the demand has increased in a greater ratio, and the price it now commands (18 to 20 cents) is higher than at any period since the memorable and disastrous speculations of 1825. There appears to be no cause to apprehend a similar result during the current year; but as the extension of culture in the United States is annually very great, and the inducement of high prices must also increase the growth in other countries, the supply must ere long overtake the demand, and the price recede to a rate which will reduce the profit of cultivation to a level with that of other commodities.

Meanwhile, the emigration to the south-western

states is immense, and the value of their lands, and of slaves to cultivate them, greatly enhanced. Virginia, and the Carolinas, supply so large a part of this population, as to diminish their resources, retard their prosperity, and reduce the value of landed property in those states, except such as is very productive, or favorably situated.

The cultivators of tobacco are, however, very amply remunerated for their labor, and with a considerable increase of the quantity produced, the price continues very high—25 to 50 per cent. more than for several preceding years—the extensive sales now made being at $6 to $17 per 100 pounds, and in some instances $20 to $30.

The price of wheat will no doubt be higher this season than usual; but the advance will scarcely be sufficient to compensate for diminished production in Virginia, where the crop has suffered greater injury than perhaps in any other part of the country.

In addition to the regular commercial transactions, which have been unusually large, a vast extent of speculation has also prevailed, chiefly in the northern and western cities and states. Landed property has there changed hands at prices far beyond what it had previously commanded. In the cities and their vicinities, the enhancement has been double, treble, even ten-fold, and fifty-fold in some instances. Population must increase with great rapidity, and the prosperity of the country be unchecked—or the value of money decrease by excessive issues of bank paper, to sustain such speculations—if former experience is any rule. The unfortunate result which attended a similar rage for property in Virginia some years ago, has probably operated as a warning against repeating the experiment here.

The stocks in the Petersburg, and in the Richmond and Potomac Rail Roads, have got into favor, both at home and abroad. The former paid a dividend of 4 per cent. for the last six months; and the stock has been sold in Philadelphia at $110 per share. In the latter company, on which $25 per share has been paid, an advance of $7 is obtained: the work is proceeding rapidly.

The transportation on the Petersburg Rail Road is steadily increasing, and the Greensville Road to connect with it, is now in the hands of the engineers. Works of a similar description, and to an immense extent, are in progress in every part of the Union, with the exception of North Carolina, where a favorable opinion of them begins to be entertained.

X.

June 25th, 1835.

SEASON AND STATE OF CROPS.

Accounts from nearly all quarters of the state continue to speak of the prospect of the wheat crop in Virginia as very bad. The only exception is from the Ohio River, on the borders of which the wheat is said to be good. The highest estimate that we have heard of elsewhere, of the probable amount of any farmer's crop, is two-thirds of an average. These estimates were for lands of very good quality—which, if our limited observations may be confided in, will withstand the inflictions of this year far better than poor and middling lands. We have on middling soil, (such even as most persons would consider as deserving a higher rank,) whole acres together on which the wheat is not worth reaping—indeed has almost disappeared: while on about 35 or 40 acres of very good soil, and after a clover fallow, the crop is excellent, and promises a fair return for the quality of the land. The price however, as of every other crop, will be much higher than usual, and in some measure compensate for the deficiency in quantity. In the few extracts from the letters of correspondents annexed, together with other matters, more full statements on this subject are made, and from some parts of the country not previously heard from.

STATE OF CROPS IN ALBEMARLE, AND THE VALLEY.

To the Editor of the Farmers' Register.

Albemarle, June 9th, 1835.

The prospect of the wheat crop in this county is really gloomy. The same causes which have produced the disastrous effects in other sections of the country have operated with us, to wit: the extreme severity of the winter frosts, and the unprecedented ravages of the Hessian fly. From my own observation, and the best information I have been able to collect, I feel confident that not more than one-fourth of an average crop will be made in the county. It is true, there are some instances where a large proportion will be realized—some a half, and perhaps a few favored ones rather more; while many others will scarcely produce more than the seed sown; so that upon the whole, I think my estimate of one-fourth of a crop, will be found not far from a correct one, judging from present appearances; but an unfavorable state of weather from this time until harvest, may even curtail the crop below that estimate. The harvest will be a very late one; little, if any, will be cut in this month—this being the fact, and the thinness of the crop on the ground, will render it more liable to receive injury from rust. I have had an opportunity of viewing the crops in the two adjacent counties beyond the ridge, Augusta and Rockingham, and I think the prospect in both were equally, if not more unpromising than in Albemarle. I understood from good authorities, that the failure was nearly general in all the valley from the Alleghany to the Potomac. The same unpropitious account will apply to all the counties I have heard from immediately below the ridge, as well as the counties south of James River from Lynchburg to Danville. It is said that the crops of wheat in the neighborhood of Charlottesville, are likely to yield a better crop than in any other section of the upper country. The corn crop is backward for the season, but now growing finely—oats promising—clover only tolerable. I hope the remaining part of the season will be more propitious for the farmer, and that we shall yet realize, if not an abundant, at least a saving crop of corn—so important under our present circumstances.

WM. WOODS.

USE OF CLOVER AND GYPSUM COMMENCING IN NORTH CAROLINA—STATE OF CROPS.

To the Editor of the Farmers' Register.

The perusal of your Register has induced me to commence some experiments on clover and

gypsum, which, from present indications, promise to realize the most valuable results.

I have sowed about six bushels and a half of clover seed, (a large quantity for this section of country,) on about eighty acres of land, the greater part of which exhibits a luxuriant growth—that particularly which was sowed early, on land in wheat. That which was sowed with clover late in March, and harrowed, is not so good.

I have made an experiment with plaster and ashes mixed, with ashes alone, and plaster alone; the latter is evidently the best; the mixture next, and the ashes alone about equal to half of the quantity of the mixture. The experiments were made on an equal number of corn hills, with a given quantity of each of the manures, and on different soils.

I propose carrying out the experiments to the gathering of the fodder, and grain, the final results of which, with a more detailed statement of facts, I will furnish you.

The prospects for crops are, at this time, gloomy. Wheat (though better than some accounts state it to be in other parts of the country,) is far from being good. Mine is considerably blasted, and otherwise injured in the heads; perhaps by the chinch bug. Corn and cotton are generally unpromising, particularly the latter, which came up badly and stands worse. From present appearances, we calculate on a very short crop. Oats generally good, though suffering for rain.

Yesterday I cut my skinless oats, which were sowed a few days before I sowed the ruffle and common oats—none of which will be ripe enough to cut in a fortnight. To-day I have sowed a few of the skinless oats, cut yesterday, for the purpose of testing whether two crops of it can be made in this latitude in a year.

Only one of my pine nuts came up, and I fear that one will die. * * * *

W. B. LOCKHART.

Northampton Co. N. C., June 23, 1835.

EXTRACTS FROM PRIVATE CORRESPONDENCE.

Bertie County, June 1835.

Our crops at this place present a gloomy aspect at present. We have not had a "season" for four weeks. Our oat crop will be entirely cut off. Our corn is smaller for the present than I have perhaps ever seen it. Our cotton has come up badly. Some persons have had to plough up, and plant again.

Nansemond, June 18, 1835.

I thank you most sincerely for the present you sent me the other day, of your second edition of Calcareous Manures. So far as I have examined it, I find that the doctrines therein advanced are supported by my observation and experiments made with marl and lime, and I am clearly and thoroughly of the opinion, that we have within our reach anin exhaustible treasure—that our lands may be so improved as to yield an abundant profit, for any *reasonable* man. Let an *unreasonable* one go to the south, and speculate in the visionary schemes of the day, and either make his fortune, or get broke. * * * *

You can have no idea of the prejudices of many of my countymen against the improvement of the soil by means of calcareous earth, and though I have now a crop of wheat growing (upon land that would formerly bring nothing of value like wheat,) that would do any man good to look at, yet the people (save a few) will not believe that marl or lime had any agency in it—they say it was stable manure. What I shall make to the acre I cannot tell; but I verily believe 20 or 25 bushels to the average, and some 40 to the acre. It certainly is the best wheat I ever saw, either in eastern or middle Virginia, and gentlemen who pass the road from the mountains, say it is the best they have seen this year.

Brunswick, June 20th, 1835.

I am much indebted to you for the second edition of your Essay on Calcareous Manures; and whilst I am almost compelled to admit, that the position maintained in your 4th proposition on the different capacities of soils for receiving improvement appears to be tenable, that your reasoning seems to be sound and your conclusions just, I am not a little troubled with the conviction that the section of country in which I reside, cannot enjoy much of the benefit which will be derived from the information contained in your very useful Essay. And since I am so much troubled with the above conviction I should like to know of you with what effect clay ashes might be employed as a substitute for calcareous earth.

MISTAKES.

It is earnestly requested that all subscribers, after making payments, will examine the next printed list of receipts, and will immediately make known any omission or mistake that may be found. If this was done, with our course of procedure, there could not possibly be a mistake of two months duration. As it is, we are sometimes first apprised of them, when nearly two years have passed after the subscribers interested had the means of correction afforded them. Such occurrences are always unpleasant—and however promptly the few mistakes on our books have been rectified, when the proper information was offered, we have not always escaped giving offence, when entirely free, personally, from even the fault of neglect or carelessness. With every care to avoid such occurrences, we have not escaped making mistakes—nor can an entire exemption from them be expected under any circumstances. But our individual share of such errors is very small—and the means of speedy correction has always been offered in the list of published receipts.

But our subscribers make many more mistakes than all justly chargeable to us, or to former agents: and among them, there have been more overpayments offered, than all the overcharges caused by mistakes on our books. When second payments have been thus offered, the sums have been sometimes returned, and at others, entered to the subscribers' credit for a year later than they had stated. At other times, money has reached us for orders that could not be executed, and which were so carelessly expressed, that it was difficult to know where to return the sums. We now hold $10 thus sent three months ago, (from persons in Bucking-

ham and Cumberland,) in a letter, without the writer's address, and concerning which we have written twice, and as yet in vain, and to different persons, to try to find out how to return the remittance.

TO CORRESPONDENTS AND READERS.

The advanced publication of one No. has served to bring forward all the mass of communications on hand, and we are now desirous of receiving, and ready to pay due and prompt attention to all others that may be soon sent in. So far as circumstances permit, we aim to publish communications as soon as possible after they are received and found suitable. None are held back to equalize the monthly publication of original matter: and therefore it may well happen, however abundant may be the supplies in general, that some Nos. may exhibit a deficiency. The first occurrence of that kind will be embraced to republish some old and long articles which well deserve to be made better known in this country, and which have been long ago selected with that view, but have been postponed for articles of present and more transient interest. Among these, are Strickland's Observations on the Agriculture, &c. of the United States, which it is believed has never been republished in this country, and has been seen only by a few of our farmers, in the bulky and very costly transactions of the British Board of Agriculture.

NOTICES TO SUBSCRIBERS.

Our subscribers at a distance, who are supplied through cross mail routes, have scarcely had the means of knowing, and therefore have not given due credit for the rare degree of punctuality with which this journal has been issued. During the whole time in which we have used the present publication office, the delivery of one monthly number only has been more than two days from the first day of any month—and then the delay of a few more days was made necessary by the editor's unavoidable absence, after the printing was completed. But delays, owing to various circumstances, sometimes occur after the packages are committed to the mail, and some of the post offices within 150 miles distance, may not receive their packages within two weeks after they have been mailed. Some causes of delay may be removed by changing one route from another—as sometimes the longest of two is the most speedy, or at least the most sure. Any information which can be furnished by postmasters or subscribers, pointing out proper changes of this kind, will be thankfully received. On the covers of this No. the day of mailing and departure will be stated, with the view of aiding such inquiries.

☞Subscribers are requested to read *at least once* the terms of publication. This request may appear superfluous and idle—but we often receive letters making inquiries, or professing ignorance of some of the plainest matters stated in the terms, and from old subscribers who have had them printed in more than a dozen of the copies which they have received.

NOTICE TO CONTRIBUTORS.

To each of the known contributors to the original matter of the Farmers' Register now on the subscription list, (not counting extracts of private correspondence,) a copy of the Supplement, containing the 2nd edition of the Essay on Calcareous Manures, has been presented, and sent by mail. Some persons have been necessarily passed over, for want of knowing their proper names or address—and probably others by mistake. It is requested that all such omissions may be made known, and they will be promptly supplied.

When stating in general terms, some months ago, the number of individuals who had written for the Farmers' Register, it was done without much regard to exactness, and only taking care not to state too large a number. Upon making a careful examination at the close of Vol. II, it was found that the prior statement was much below the truth, and that the actual number of contributors then was 215. The names of much the greater proportion of these still are subscribers to the Farmers' Register, and it is hoped that all will continue to add to their former favors—and in every successive publication there are presented the contributions of new and welcome aids. To all these friends we are indebted for the very existence of this work—and heavy as our obligation is admitted to be, still more of benefit has been conferred, by these contributions, on the agricultural community in general.

TERMS OF PUBLICATION FOR FARMERS' REGISTER.

1. The Farmers' Register is published in monthly numbers, of 64 large octavo pages each, and neatly covered, at $5 a year—payable in advance.

2. Or five *new* subscribers by sending their names and $20 at one time to the editor, will receive their copies for one year, for that sum, or at $4 for each. Purchasers of any 5 volumes (except Vol. I.) at one time in like manner, shall have them for $20.

3. The risk of loss of payments for subscriptions, which have been properly committed to the mail, or to the hands of a postmaster, is assumed by the editor.

4. For all copies not received by mail, duplicates will be furnished to those subscribers who have complied with their own obligations.

5. If a subscription is not directed to be discontinued before the first number of the next volume has been published, it will be taken as a continuance for another year. Subscriptions must commence with the beginning of some one volume, and will not be taken for less than a year's publication.

6. The mutual obligations of the publisher and subscriber, for the year, are fully incurred as soon as the first number of the volume is issued: and after that time, no discontinuance of a subscription will be permitted. Nor will a subscription be discontinued for any earlier notice, while any thing thereon remains due, unless at the option of the editor.